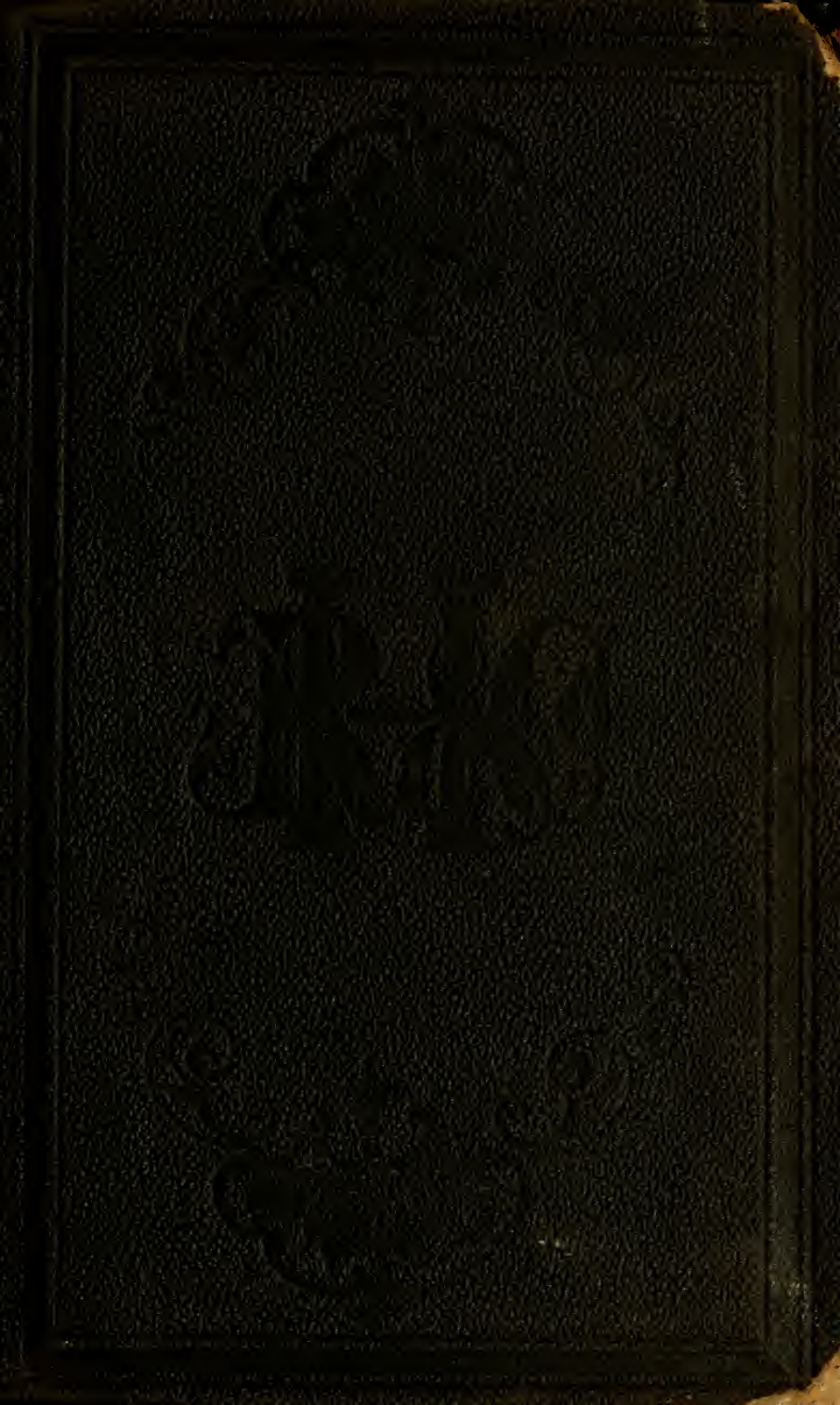

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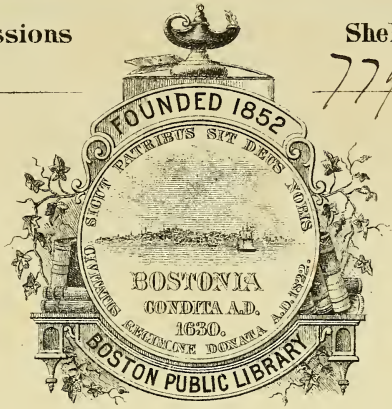

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THE CHOLERA:

A FAMILIAR TREATISE

ON ITS

HISTORY, CAUSES, SYMPTOMS AND TREATMENT,

WITH

THE MOST EFFECTIVE REMEDIES,

AND

PROPER MODE OF THEIR ADMINISTRATION, WITHOUT THE AID OF A PHYSICIAN,

THE WHOLE IN LANGUAGE FREE FROM MEDICAL TERMS,

ESPECIALLY ADAPTED

FOR THE USE OF THE PUBLIC GENERALLY.

ALSO CONTAINING A

History of the Epidemics of the Middle Ages.

By G. T. Collins, M. D.

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PART I.

INTRODUCTION.

"He that writes,
Or makes a feast, more certainly invites
His judges than his friends; there's not a guest
But will find something wanting, or ill drest."

It is known that the cholera exists as an epidemic, at the present time, in the Old World, and a natural feeling of apprehension is extant that this awful and desolating plague may turn its course from its ancient haunts toward the shores of America.

I do not think we should be alarmed in anticipation of such an unwelcome visit, yet it will be the part of wisdom to prepare for its coming. It may not invade our shores for months or years, and blessed indeed shall we be if we escape altogether. We have, however, no good reason to hope for such a favor. It is well, then, to be prepared, so that when the mysterious, death-dealing fiend makes his approach, we may be the better able to resist his attacks.

In presenting this little work to the public, my object is, in all sincerity, to place in the hands of the people the means of guarding against the invasion of this terrible disease. The suggestions made

as to the treatment of cholera are mostly the result of diligent observation and personal experience during the prevalence of the epidemic in 1849, 1850, and 1851.

During that period, I was almost constantly in its midst. I came in contact with it at all times, and in all its phases. The first case that came under my observation occurred on board a steamboat, while on my way from Cincinnati to St. Louis. The "California fever" was then raging in all its fury, and thousands from every section of the country were rushing to the newly-discovered "El Dorado." Like every other boat bound in that direction, our craft was crowded with gold hunters, all eager, anxious, excited with visions of wealth, hastening toward the rumored mines of exhaustless treasures. The report had been started, while at Cincinnati, that several cases of cholera had occurred on board of a boat lying alongside of us. The passengers became alarmed, and but a few hours after leaving the landing, anxious inquiries were heard for a "doctor." A man on the lower deck had been attacked with cholera.

I found the victim to be a deck passenger. While on shore in Cincinnati, he had been drinking freely, and in a state of intoxication had fallen asleep on a pile of grain sacks. In this condition his friends had brought him on board the boat. A sudden attack of diarrhea, accompanied with great pain, distress at the stomach, and vomiting, awoke him from the stupor into which he had fallen. In this condition I first saw him. He was a strong, power-

ful man, about thirty-two years of age. Laudanum, camphor, red pepper, and brandy had been given him, without alleviating the symptoms. Shortly after I first saw him, he was attacked with spasms, in the fingers, toes, and muscles of the legs; he was covered with a cold, clammy sweat; his body grew cold to the touch; his features were contracted; the flesh on his extremities shrunken and in ridges, and the pulse could scarcely be detected. His eyes were sunken deep in their sockets; his skin became of an irregular, spotted, leaden color. He rapidly sunk into a listless, torpid condition, and died about thirteen hours after he awoke from his drunken stupor. Unquestionably this was a case of malignant cholera, in its most violent aspect.

From this time until our arrival in St. Louis, great alarm existed on board, and several new cases occurred, the greater number of which terminated fatally.

Two other physicians were on board, and the treatment we adopted, as well as the circumstances would permit, were in accordance with the suggestions advanced by distinguished medical authorities of Europe and America.

Except in a few instances, where the remedies were applied at the very outset of the disease, our efforts were unavailing. Subsequent experience convinced me of the folly of attempting to correct the disturbance of the functions by pouring medicines into the stomach of a person, to be almost immediately thrown off by vomiting or purging; and the ordinary means resorted to to allay the irritation of

the stomach and bowels were, in severe cases, almost entirely inert, or their action so slow that the patient sunk into a lethargic state, the sure forerunner of death, before the desired reaction of the vital organs could be established.

In no city of the Union did the cholera rage with more fatal malignity than in St. Louis. The number of its inhabitants at that time was estimated at about 65,000. On the breaking out of the epidemic, however, it was supposed that at least 15,000 persons sought safety in flight. The majority of those who had the means to do so, left the city. The population, therefore, during the prevalence of the cholera could not have exceeded 50,000. Out of this number more than 6,000 died of the disease.

During the entire time the plague fiend held carnival in that city, I was constant in my attendance upon his victims, and while administering, to the best of my ability, to the necessities of the sufferers, I acquired a fund of knowledge, which I humbly trust, by being sent abroad through the medium of these pages, may be the means of relieving the distress and saving the lives of many, who, in case of attack, may be placed beyond the reach of adequate medical aid.

The language made use of is plain, and as free as possible from professional technicalities. Through this medium, those who are removed from the vicinity of a competent physician will be enabled to adopt a method of treatment, which I am confident, if faithfully followed, will afford relief, and cut short a disease which, with the advantage of a few hours,

yes, even a few minutes' delay, will carry its victim to the grave.

As regards the remedies, treatment, and manner of expression adopted, the medical scholar and student have nothing to do. The work is not intended for the professional few, but for the many—the people.

However, should any objections be urged against the material or style of the work, I assure those for whom it was written that I have submitted as much of a mode of treatment as is practicable under the circumstances, and which, I know, in the hands of non-professional persons, in instances where I have recommended it, has heretofore proved eminently successful.

I have introduced, at the commencement of the work, a brief history of the "Epidemics of the Middle Ages." The reader will, I think, find much to interest him in this portion of the book.

Without giving credit, in all cases, in the body of the book, to the authors from whom I have selected, I desire here to acknowledge my indebtedness for the use I have made of Hecker's work on "Epidemics," Jameson on "Epidemic Cholera," "Payne's Letters on Cholera," and "Johnson on Tropical Climates." Therefore, do not let the critic say, in the language of Hudibras,

> "Much thou hast said, which I know when
> And where 't was stol'n from other men."

PART II.

HISTORY OF EPIDEMICS.

A RELIABLE history of the great plagues which have, from time to time, afflicted the human family, can not fail to be interesting as well as instructive. I have, therefore, compiled such authentic information on the subject as might, with advantage, be embraced within the brief limits of a work of this description. When we read of the fearful visitations of pestilence and disease in ages past, and compare them with sufferings, from a like cause, in our own day, we can not fail to realize how light are the afflictions of the present generation, and how much reason, therefore, we have to feel grateful for the mercies shown us by the great Ruler of the universe. When we learn that, in the fourteenth century, one-quarter, at least, of the inhabitants of the Old World were swept out of existence in the short period of four years, and that some countries, England among the rest, lost more than double that proportion of their populations in the course of a few months, we may well congratulate ourselves that the visitations of the cholera, terrible as they appeared to our affrighted minds in 1832, and more recently in 1849 and 1850, has not been like the

scourges of the past, and feel sincerely thankful to the "Creator and Preserver of mankind" for our exemption and deliverance.

As to the causes which have, at various times in the history of the world, sent pestilence and death throughout the land, human knowledge is not yet sufficiently advanced to determine with any degree of certainty. Very much, however, has been done, through the enlightened scientific researches of the age, to arrest the progress of these great evils, and to mitigate the sufferings of our fellow-men. The votaries of science have looked, with earnest eyes, into the mirror of human life, and have zealously, and at the risk of their own lives, explored the bearings of the phenomena of nature, and closely scanned the inexhaustible array of facts and circumstances which could, by any possible chance, have an influence upon the laws of particular diseases.

In this respect, a history of the plagues with which the world has been afflicted becomes not only interesting to the general reader, but is useful as a comparison with similar events in different ages, by which the close observer will discover modifications of these great evils, in accordance with the progression of mankind in the moral, intellectual, and physical laws of his existence. Pestilences assume different forms, evidently, as well in their modes of attack as in their prevalence and final results. In the course and progress of centuries, the records of the pestilences that have prevailed at different periods, shows us the gratifying fact that

the plagues of our day and generation are mild and harmless compared with the past.

The superstitions of by-gone ages attributed the visitation of scourges to various and singular causes, and shows us the depths of ignorance, vice, and unbridled passions into which the minds of men were plunged. Medical science was, for the most part, but a system of jugglery and imposition, and the mysterious visitations, which terrified as they swept them away, were attributed sometimes to the anger of Heaven at the sins of the people. In the year 168 of the Christian era, a frightful pestilence, which penetrated into every part of the known world, was accounted for by the transporting to Rome of the statue of Apollo, after the taking of Selucia. It was remembered that, like the cholera of our days, the plague had always come from the East.

That which devastated Rome in 589 spared no classes of society. Abbe Pelagius was one of the first who fell a victim to it. The year following, 590, it penetrated into France, by the way of Marseilles, and King Gontran, in a general assembly of notables, ordered a general fast to be observed throughout the land, for the purpose of appeasing the anger of Heaven. The only nourishment allowed to be consumed was coarse barley bread and water.

The successor of Pelagius, Gregory the Great, ordered seven distinct processions, composed of clerks, monks, religious fraternities, married women, widows and children. Still the plague was not stayed,

and, during a procession, which lasted one hour, eighty persons were struck down.

"We may smile, or coldly sneer,
The while such *stupid things* we hear,
And wonder why they were believed,
And how wise men could be deceived.
Bathing our renovated sight
In the *advancing*, glorious light,
We marvel it was ever night."

PESTILENCE OF THE FOURTEENTH CENTURY.

One of the most fearful pestilences that ever scourged the earth was that which visited Europe and Asia during the fourteenth century. In this instance, it was said by the historians of the times to have been preceded by mighty revolutions in the earth. "From China to the shores of the Atlantic the foundations of the earth were shaken, the atmosphere was in continual commotion, and endangered, by its poisonous influence, both vegetable and animal life." These terrible convulsions are said to have began in 1333, fifteen years before the plague broke out in China. According to their traditions, a famine was followed by torrents of rain, and more than four hundred thousand people perished in the consequent floods. "A few months afterward, an earthquake caused an extensive range of mountains to sink and disappear, and instead a lake was formed, of more than a hundred leagues in circumference, where thousands found a watery grave."

Simultaneously with these floods and earthquakes in China, the chronicles of Europe tell of uncommon

atmospheric phenomena, terrific thunder-storms, and an eruption of Etna. According to Chinese traditions, four million people perished in that region during the year 1337. Earthquakes occurred at short intervals and of long durations, followed by floods, which caused incredible devastation. Great floods also occurred in the neighborhood of the Rhine and in France, which could not be attributed to rains, for even on the tops of mountains springs burst forth, and the consequent inundations caused terrible damage and loss of life. Egypt and Syria were likewise visited with fearful commotions.

These convulsions of the earth continued until the year 1347, when the plague, known as the Black Death, made its appearance in the East.

"On the island of Cypress the pestilence had just broken out, when an earthquake shook the island, accompanied by so frightful a hurricane that the inhabitants fled in dismay. The sea overflowed, and few outlived the terrible event. Before the earthquake, a pestiferous wind spread so poisonous an odor that those who inhaled it expired in fearful agonies." In coincidence with this statement, German accounts of that period say that a "thick, stinking mist advanced from the East and spread itself over Italy."

The truth of these traditions, however we may be inclined to doubt them, can not altogether be called into question when we consider the connection of events; for the chronicles of that date, in every section of Europe and Asia, make mention of the fearful devastations of earthquakes more general than at

any other period within the range of history; and as at that time the superstitions of the people transformed natural occurrences into miracles, it was stated that "a fiery meteor descended on the earth in the East, and destroyed every thing within a circumference of more than a hundred leagues."

Divested of the errors of superstition, we obtain a glimpse of the truth. We see innumerable floods converting immense tracts of land into swamps. As the waters subsided and the flooded districts were drained, foul vapors arose every-where from decomposing vegetable and animal matter, made more horrible and poisonous by the odor of putrified corpses, the victims of floods, famines, and earthquakes, which, even in the better regulated countries of Europe, they could not remove quickly enough from the sight of the living. It is probable, therefore, that the atmosphere, thus contaminated with its deadly poison, gave origin to the *Black Death* wherever the organs of respiration came in contact with it, and from thence the destroying angel spread pestilence and destruction throughout the land. His hand, unstayed by religion, science, or morality, sentiments at that time alike dormant and powerless.

The Oriental Plague, or Black Death, entered the western countries of Asia from China, in the year 1347, and here the historian obtains the first certain knowledge of the character of the disease. From China, the route of commerce ran to the north of the Caspian Sea, through Central Asia; from thence to Constantinople, the medium of communication between Asia, Europe, and Africa. Thus, in all di-

rections, contagion made its way, and doubtless Constantinople and the harbors of Asia Minor were the great centers of infection, whence it spread through all the world.

The plague appeared, in 1347, in Cyprus, Sicily, Marseilles, and other seaports of Italy, quickly afterward breaking out in Sardinia and Corsica. It passed through the whole of France, Germany, Poland, and Sweden, and reached England in 1349, breaking out in the counties of Dorset, Devon, Somerset, Bristol, Gloucester, Oxford, and London successively. From England the plague was carried by a ship to Bergen, the capital of Norway. In Russia it appeared two years later than in Southern Europe. Thus, the chroniclers of those days say the fearful plague originated

> "By the imprisoning of unruly wind
> Within her womb, which for enlargement striving,
> Shook the old beldame earth."

THE HORRORS OF THE BLACK DEATH.

> "All sat mute,
> Pondering the danger with deep thoughts; and each
> In other's countenance read his own dismay."

People were struck down by the Black Death as if by lightning, and the young and strong were more frequently its victims than the aged and infirm. Sometimes it commenced with bleeding at the nose, which was a sure sign of death. Both in men and women, tumours in the groin and the inside of the thigh appeared at the beginning. These varied in

size, but were frequently as large as an egg. Similar tumors appeared afterward all over the body, and black and blue spots came out on the arms and thighs. These spots were indications of the fatal termination of the disease. No power of medicine brought relief; almost all died in from one to three days, and generally without fever or other symptoms. The plague spread itself with increased fury, as it was communicated from the sick to the healthy; and even contact with the clothing, and other articles which had been used by the infected, induced the disease. As it advanced, not only men but animals fell sick and expired if they touched things belonging to the diseased or dead; multitudes of hogs, dogs, cats, and fowls fell victims to the contagion.

Such was the form which the plague assumed in the fourteenth century. Not only individual dwellings, but whole cities were infected, which in the middle ages were, with few exceptions, narrowly built, kept in a filthy state, and surrounded with stagnant ditches. Flight was of no avail to the timid; for, even though they carefully avoided all communication with the diseased or suspected, yet their clothes were saturated with the pestiferous atmosphere, and every breath they drew imparted to them the seeds of the death-dealing malady, added to which the propagation of the plague through articles of household furniture and a thousand other things to which the poison adhered, and which from want of caution must have been infinitely multiplied, and which removed from free access to the air retained the matter of contagion for an indefinite period,

and increased its activity and engendered it like a living being; and thus its frightful consequences followed for many years.

After the first fury, however, was spent, the pestilence passed into a febrile form of what was called the "Oriental plague." The tumors no longer took place, and spitting of blood was seldom known to occur, so that in 1360, and till 1373, cases appeared with the black spots of the plague, but all the symptoms were of a milder form, and consequently with less fatal results. It has been supposed, by excellent medical authority, that the form thus assumed by the oriental plague, is identical with the cholera of the present age, and that the term *Black Death*, applied to it, was derived from the livid and frequently spotted appearance of patients in cases of malignant cholera.

A distinguished medical writer says: "While we express our opinion that the epidemic which visited us in 1832 was not a new disease in the great domain of the world, we must admit that, to us of the present time, it is as new as though it had never existed; and hence it is that the several countries of Europe, like our own, were taken by surprise in encountering the disease, the more so from its possessing such a vast dominion, and in this respect it is new."

THE MORTALITY OF THE "BLACK DEATH."

It would be impossible to arrive at a positive statement of the numbers who died from this mal-

ady. The people were in a state of ignorance. The church, with its corruption and superstition, had all classes under subjection. Law and order were unknown. Every city was a fastness. Robbers encamped in the open fields or by the roadside; and the laborer was a feudal slave. Humanity was scarcely known. Life was little regarded. Witches and heretics were burned alive; and governments were not concerned about the numbers of their subjects.

"Thus roving on
In confused march forlorn the lawless bands,
With shuddering horror pale, and eyes aghast,
Viewed their lamentable lot, and found
No rest."

The first requisites for ascertaining the loss of human life—that is, a knowledge of the amount of the population—was altogether wanting. The most reliable estimates given, however, state that in China more than thirteen millions died. India was almost depopulated. Tartary, Syria, and all the adjoining countries, were literally covered with dead bodies. On the roads, in the fields, and in the cities, unburied bodies alone were seen. Cyprus, it is said, lost all of its inhabitants; and ships without crews were seen, long after, floating about in the Mediterranean, and also in the North Sea, and spreading the plague wherever they drifted ashore. It was reported to Pope Clement that in the East, excepting China, twenty-three millions fell victims to the pestilence.

DEATHS BY THE PLAGUES IN THE PRINCIPAL CITIES.

We give the following table as the result of investigations, made by competent authorities, in regard to the mortality in some of the principal cities of Europe, during a period of four months:

Florence	60,000
Marseilles (in one month)	16,000
Siena	70,000
Venice	100,000
Paris	50,000
St. Denis	14,000
Avignon	60,000
Strasburg	16,000
Basle	14,000
Erfurt	16,000
Norwich	51,000
London	100,000

It is stated by the German writer Spangenberg that of the Franciscan friars in Germany 124,000 died. All the smaller cities, towns, and villages suffered incredible loss. In the whole country scarcely a tenth part remained alive.

Of all the estimates of the number of lives lost in Europe, the most probable is that, altogether, a fourth part of the inhabitants were carried off. The population of Europe at that time certainly amounted to one hundred millions. It may therefore be reasonably assumed, without exaggeration, that Europe lost from the Black Death twenty-five millions of inhabitants.

In many places in France not more than one out of every ten inhabitants were left alive; and the fury of the plague was felt alike in the palace and

the cot. Churchyards were unable to hold the dead, and houses, left without inhabitants, fell to ruins. In Avignon the Pope consecrated the Rhone, so that bodies might be thrown into it, as the quickest way of disposing of them. In Vienna the dead were thrown into immense pits outside of the city by thousands, as was also done in other large cities.

In 1350 the Black Death had so far subsided in Italy, that Pope Clement VI invited the faithful to Rome to join in the celebration of a grand jubilee. This gathering of such a large body of people so prematurely was followed by a new eruption of the pestilence, from which, it is said, scarcely one in a hundred of the pilgrims escaped.

Italy was, in consequence, depopulated anew, and those who returned spread the poison in all directions. The chronicles of the times remark that it was "somewhat singular that Pope Clement should have adopted so dangerous a measure as calling together such crowds of people, since he himself was so convinced of the salutary effect of seclusion that he kept up constant fires on his grounds, and suffered no one to approach him."

The inhabitants of Iceland and Greenland did not find, as might have been supposed, protection against the plague in the coldness of their climate; for, after its introduction from southern climates, it spread great havoc among them. In Denmark and Norway people were so overcome with their afflictions that all travel and communication with other countries ceased, and they gave themselves up to despair.

In Russia the Black Death did not break out until 1351, after it had passed through the south and north of Europe. But the mortality was fearful, filling the nation with scenes of suffering, death, and despair; and there the voice of nature was silenced by fear and horror. Parents deserted their children, and the closest ties of relationship were altogether unheeded. As in every country visited by the plague, the wealthy abandoned their treasures and gave their riches and estates to the churches and monasteries. Merchants whose wealth was unbounded, renounced all their earthly goods, and carried their treasures to the monks and priests, this being, according to the notions of the age, the surest way of securing the favor of Heaven—

> "As carnal seamen in a storm,
> Turn pious converts and reform"—

thereby hoping to obtain exemption from their afflictions. But wealth had no charms for the monks and priests at this time, for it only brought them death by its infection, and the gates of the convents and churches were closed against the people. Amid this general lamentation and wo, every law, human and divine, was disregarded. The officers of the law were either dead or had fled for safety, and every one was left to act without restraint. The people who did not seek safety in flight, carried odoriferous flowers and herbs with them, when they ventured abroad, to avert the baneful influence of the air. One citizen fled from another; relation from relations. Every kindly feeling was extinguished, and those who stood in need of assistance fell a prey

to attendants greedy for gain, who, for exorbitant charges, and with the hope of plunder, merely remained with them till the last moment, and then became, in almost every instance, themselves the victims of their own avarice.

Females of rank forgot their natural bashfulness, and gave the care of their persons to male attendants. With large numbers, instead of sorrow and mourning appeared dissipation and mirth, which females especially seemed to consider conducive to health.

Poverty compelled large numbers of the lower classes to leave their dwellings in search of food, and thus they fell by thousands in the streets, both by day and night; while the bodies of those who died in their houses were placed in the street by the survivors, if there were any; and thus they lay in heaps, exposed to the gaze of the affrighted passers-by, while the stench that filled the air was horrible.

THE FLAGELLANTS.

We have said that one of the prominent effects of the Black Death was an awful sense of contrition for past sins; repentance seized the transgressor, and his first thought was to propitiate the Divine wrath, to make restitution, and seek reconciliation by self-chastisement as their just punishment.

In the fourteenth century, the monastic system was in its full vigor. Ecclesiastical orders were looked upon with superstitious reverence by all

classes of the people. It was natural, therefore, that self-willed penitence and bigoted zeal should control the minds of men.

While the nations were filled with lamentations and woe, there originated in Hungary and Germany the sect known as the Flagellants. The order consisted of persons mostly from the lower classes, who took upon themselves to do penance for the sins of the people, and thus, by prayers and self-punishments, avert the ravages of the plague. The order was welcomed every-where by the nobles and ecclesiastics, who were encouraged with the superstitious idea that through them God's vengeance might be stayed.

The members of the order wandered through the streets with eyes fixed on the ground, accompanied with every evidence of contrition and mourning. They were clothed in somber garments, and carried scourges tied with several knots, in which sharp pieces of iron were fixed. They performed penance in some public place twice every day, by scourging themselves, amid the singing of psalms and loud supplications for the averting of the plague, in which the people joined; and from these ceremonies, originating in the grossest delusion of religious zeal, no doubt great consolation was derived, although it is highly probable that the processions of the order, and the consequent gathering of the people in the public places, had a tendency to promote the spread of the pestilence.

The proceedings of the Flagellants appears to us like the insane actions of men prompted by religious

frenzy and fear. May we not find, in the conduct of pious zealots occasionally, at the present day,

> "That mad as Christians used to be
> About the *fourteenth* century,
> There 's *lots* of Christians to be had
> In this, the nineteenth, just as mad."

THE PERSECUTIONS OF THE JEWS.

The idea took possession of the minds of the people that the horrible plague which was desolating the land was caused by poison; and on whom would the suspicion of its origin be so likely to fall as on the Jews?—

> "Ejected out of Church and State,
> And all things but the people's hate"—

a race opposed by all their religious and fanatical fury. They were accused of having poisoned the wells, and, by their superior knowledge of alchemy, to have found means to infect the air. They alone were considered as having brought this fearful mortality among the Christians. In consequence, they were pursued with merciless cruelty, and indiscriminately given up to the fury of the populace; or, if brought before the tribunals, they were buried alive, with the form and sanction of the law.

Scenes like these had their counterpart in the seventeenth century, in the hanging and roasting of witches and sorcerers.

The persecutions of the Jews commenced in September, 1348. The charge against them found a response in every country where the plague had ob-

tained a place for its work of death, and where Jews had found a foothold, and Christians every-where bound themselves by an oath to extirpate them by fire and sword. In Basle, all the Jews, without sentence or trial, upon the outcry of the people, were inclosed in a large wooden building, constructed for that purpose, and burnt together. The same thing took place at Freyburg. At Spires, the Jews, driven to despair, assembled in their own houses, and setting them on fire, consumed themselves with their families. At Strasburg, two thousand were burned alive in their own burial-ground. At Eslingen, the whole Jewish community were burned in their own synagogue. Wherever the Jews were not put to death, they were banished, and so, being compelled to wander about, fell into the hands of the country people, who gladly became their executioners. A few Jews saved their lives by baptism, but these were afterward burned at different times, so that scarcely any escaped.

Clement VI, an exception to the general blindness and misguided fury of the times, attempted to protect the Jews, as far as lay in his power; but this high ecclesiastical dignitary could not restrain the unbridled madness of the people. The Emperor, Charles IV, also sought to avert their destruction but he dared not draw the sword of justice in their defense, and was obliged to yield to the demands of his nobles for their annihilation—perhaps, as was suggested by an ancient historian, "to free themselves from their indebtedness to the Jews, who were their creditors in large amounts."

Those of the Jews who could make their escape found refuge in Lithurnia; also in the realms of Boleslav V, Duke of Poland, who granted them protection and liberty of conscience, and in the dominions of King Cassimar the Great, who received and gave them favor at the entreaties of a beautiful and favorite Jewish mistress.

Strange as it may appear to us in this enlightened age, the superstition which gave rise to the persecutions of the Jews in the fourteenth century has an existence at the present time. The belief in the administration of poison has been handed down from the days of barbarism, and in the year 1865, in Naples, we find the same ignorance attributing the cholera to the same cause. A recent correspondent of the *London Times* says: "I have myself been assured, by really sober and decent persons, that poison is thrown into the air. A few days only have passed since some doctors were sent to disinfect a house in which a cholera patient had died; but a crowd assembled, and, with howling and whistling, drove them away, and compelled them to take refuge in the nearest police-office. In another house, a woman lay sick of cholera, on straw, in a damp room, without the comforts of even the necessaries of life, when a guard of public security and a doctor were sent to carry her to the hospital. On this, all the women in the neighborhood rose as one man, I was about to say, and compelled them to fly. Thus the authorities, to a certain extent, are impotent; medical men fear to dispense their own medicines, and do not escape danger by writing prescriptions,

as they are said to act in combination with the druggists. It is to be hoped that cholera will not present itself in a dangerous form, but should it do so, we should be in a bad state. The belief in the administration of poison is, however, as old as barbarism; it has always existed when any epidemic has prevailed in the South, and during the last visitation of cholera in Palermo a benevolent English lady found it necessary to her own personal safety to suspend her attention to her poor neighbors."

The fallacy in regard to poisoning of the atmosphere was terrible in its results, because it arose at a time when law and the officers of the law were powerless, and forced to yield to the impressions of the multitude. Whatever the will of the authorities may have been, they could not enforce it, as was illustrated in the case of the Count of Savoy, who had given the Jews shelter in his Castle of Chambery; but the populace, exasperated and terror-stricken, attacked the castle, broke open the gates, and massacred many of those who had sought refuge within its walls. The Count, however, repulsed the mob, and hanged the ringleaders on the battlements. But even he soon adopted the popular prejudice against the Jews. He brought to trial those who escaped being torn to pieces; they were condemned to death, and were burned in an old barn.

THE LEPROSY.

The plague was not the only visitation in these times; there was also leprosy. The description of this hideous malady is painfully graphic. It also came from the East, like the plague, though, according to Pope Stephen, who wished to discourage the marriage of Carloman with a daughter of Didier, King of Lombardy, the leprosy came from that country, as he stated in a letter to his niece Bertha.

In the early part of the fourteenth century the number infected with leprosy was considerable. They were driven out of every city, out of every monastery, as out of every earth; now the wretched outcasts wandered in bands through the country, and sometimes encamped in the neighborhood of small towns. In 1321 the rumor spread on both banks of the Rhine that those miserable creatures, inspired by the demon through the agency of the Jews, imagined that if they could find the means of communicating their own horrible malady they should have a share in the wealth and grandeur of mankind. To attain this object, they were said to have corrupted the water with certain poisoned powders, and forthwith they began to give each other the titles of count and baron. The populace rose and hunted them down; many were caught and burned alive, and others sentenced to die of hunger.

THE PARISIAN DOCTORS.

The report of the commission of medical men, appointed by the Government of France, is a very singular document to emanate from learned men even in the fourteenth century. It serves to show, however, the depths of ignorance into which all classes had fallen. Their claims to superior knowledge, as to the causes of the plague, and their elucidation of the mystery, reminds us of blind men walking,

> Who always carry their noses higher
> Than those who have their eyes and sight entire;
> And who, while striving to avoid a fall,
> Flounder in the dirtiest mud of all.

The document of the Parisian doctors is sufficiently curious to interest our readers. We give place to a portion of it:

"We, the members of the College of Physicians of Paris, have, after mature deliberation and consultation on the present mortality, collected the advice of the old masters in the art, and intend to make known the cause of the pestilence more clearly than could be done according to the rules and principles of astrology and natural science. We, therefore, declare as follows:

"It is known that in India, and the vicinity of the Great Sea, the constellations which combated the rays of the sun and the warmth of the heavenly fire exerted their powers especially against that sea, and struggled violently with its waters. Hence vapors often originate, which envelop the sun and

convert his light into darkness. These vapors alternately rose and fell for many days, but at last the sun acted so powerfully upon the sea that it attracted a great portion of its waters; thereby they were so corrupted that the fish which they contained died. These corrupted waters, however, the heat of the sun could not consume; neither could other wholesome water—hail, snow, or dew—originate therefrom. This vapor spreads itself through the air and envelops the earth in fog. If the inhabitants on all the adjoining islands and countries to which the corrupted sea-wind extends do not comply to the following, or similar means and precepts, we announce to them inevitable death, unless the grace of Christ save them:"

"We are of opinion that the constellations, with the aid of nature, strive, by virtue of their divine might, to protect and heal the human race, and to this end, in union with the rays of the sun, endeavor to break through the mist which will be converted into a deleterious rain. Now, as soon as this rain announces itself by thunder or hail, every one of you should protect himself from the air, and, as well before as after the rain, kindle a large fire of vine wood, green laurel, or other green wood, which should be burnt in great quantity in the market places and in the houses, until the earth is again completely dry, and for three days afterward no one ought to go abroad in the fields."

These learned doctors then give a long list of articles to be eaten, and others to be avoided. "Fruits," they say, "are highly injurious without

wine. If it rain, treacle (molasses) was recommended and good wine in abundance. Olive oil was declared fatal. Fat people were not to eat or sit in the sunshine, and never to indulge in the luxury of a bath."

These were strange precepts to emanate from the most learned pundits of the fourteenth century; but the intelligent reader will, no doubt, conclude that they are quite as sensible as many of the theories and absurd notions, in regard to the cause and treatment of diseases, prevailing at the present time.

In fact the famous faculty of Paris were placed in the same predicament that some of the professors of the present day are. They are under the necessity of appearing wise, and to conceal their deficiency they indulge in a jargon of mystery, the true meaning of which they, as well as the world at large, are totally ignorant.

There is no doubt but that these physicians and learned men were sincere believers in the influence of the planets on human diseases; but instead of trying to discover by what laws these effects were produced, they endeavored to make facts conform to their superstitious notions, and thus found themselves in a continued state of bewilderment. They believed the constellations all potent as the cause of the pestilence, and that the perverted and obstructed laws of nature were but subordinate causes aggravating the result.

A GRAND PHENOMENON.

The historian mentions, and with profound gravity, what he calls "a remarkable circumstance—a grand phenomenon;" viz., the wonderful fertility of women after the cessation of the pestilence. "Marriages were, almost without exception, prolific, and double and treble births were more frequent than at other times."

> Wonders, I'm sure, will never cease,
> Young and old women still increase,
> *Secundum naturam*, the race;
> Children, like mushrooms, spring apace.

"It was also remarked that after the 'great mortality' the children were said to have got fewer teeth than before." This latter statement led to a protracted and learned discussion, which, having continued, on the part of the most eminent doctors of the age, for many years, without seeing for themselves, was finally settled to the satisfaction of all on discovering that children, as they had done before, cut about the same average number of teeth, and, no doubt, women bore about the same average number of children. A few other vagaries served, from time to time, to create exciting subjects of debate as connected with the terrible plague; but the people gradually consoled themselves after the sufferings they had undergone. The millions of dead were forgotten, and the whirl and bustle of existence brought men back to the reality that the world still belonged to the living.

IMAGINATION A CAUSE OF DISEASE.

It must be apparent to those who have been at all familiar with cholera, and other epidemic diseases, that the imagination has a large share in producing individual cases. It is a well-known fact that excess of joy will affect the circulation, sorrow will disturb the digestion, passion will inflame the system, and fright will chill; and it is equally true that not only are these transient effects produced through the influence of the mind, but special and positive diseases are, under certain circumstances, the result of mental impressions.

This fact, illustrated in the history of the epidemics succeeding the fourteenth century, should be borne in mind in treating the great pestilence of the present age. Those who may doubt the truth of the statement that cholera is frequently engendered through fear, will here see the evidence of positive disease produced by no other cause than mental excitement.

THE DANCING EPIDEMIC.

In the year 1374, but a short time after the Black Death had swept its countless multitudes from the face of the earth, a strange delusion came over the minds of men. Convulsions of the most extraordinary kind took possession of the body, and distorted it with wild and fearful gestures and exclamations, and gave to those affected, while under the influence of the horrible disease, the appearance of demons.

It did not remain confined to one particular locality, but was disseminated, like a spirit of evil, by the sight of the sufferer, and spread through Germany and thence through all parts of Europe.

THE VICTIMS.

Those who were under the influence of this strange delusion appeared to lose all control over their senses. They formed circles, hand-in-hand, and continued dancing, regardless of observers, or, in fact, of all decorum, for hours together, in wild delirium, until at length they fell to the ground in a completely exhausted state. They then complained of extreme oppression, and groaned as if in the agonies of death. Their abdomens became enlarged, and until they were bound tightly around their waists with clothes they were not relieved. While dancing, they neither saw nor heard, being insensible to surrounding circumstances, and haunted with visions of supernatural things—the religious notions of the age having predominance in their minds. Where the disease was completely developed, the patient fell to the ground senseless, panting, laboring for breath, and foaming at the mouth; then, suddenly springing up, began again the strange dance and contortions. As swathing of the body was the popular remedy, many wore a cloth begirt about their waists, so that they might receive immediate relief from the bystanders, when the paroxysm was over, who, by inserting a stick, could twist it tight and compress the swelling of the belly, thus relieving their sufferings.

These frightful spectacles were seen in every town and village. Peasants left their plows, mechanics their workshops, wives their domestic duties, to join the wild revels. Secret desires were excited, and found relief in wild enjoyment. Young girls and boys, young men and unmarried women, of hitherto unblemished morals, greedily imbibed the mental poison. And thus the disgusting plague spread on, and found abundant food in the tone of mind which prevailed in the fourteenth and fifteenth centuries, and the effect was, in many instances, to cause a permanent mental disorder.

ST. VITUS'S DANCE.

"The universal frame 's
So loose, that it but wants another push
To leap from its hinges."

The dancing plague took the name of St. Vitus's Dance, because it was said that those who went to the chapels of this saint for help, on being instructed, commenced dancing to the strains of music, until they were completely cured. Thus St. Vitus became the patron saint of those afflicted with the plague.

The sufferers were led to the altars of St. Vitus on foot, or conducted in carriages and other modes of conveyance, accompanied by musicians, who would play so long as the patients could stand, when, being completely exhausted, they were freed from the disease.

ST. JOHN'S DANCE.

This malady also took the name of St. John's Dance in many parts of Germany. At this period the Germans gave way to Bacchanalian dances, and other wild orgies, while keeping the festival of St. John the Baptist. Thence there is good reason for supposing that the frantic celebration of the day only served to aggravate a malady which had been raging with disgusting fatality to the minds of men.

As to its physical character, it may be readily understood, by the intelligent reader, how an indulgence in such protracted and fatiguing exercise, and such strange distortions of body, could degenerate into so serious a disease. With the excitement of mind there was a neglect of proper food and nourishment for the body. The stomach and bowels were debilitated by hunger; as a consequence, they were attacked with excruciating pains and swelling of the abdomen. The binding of a cloth tightly around the body afforded relief temporarily, as we know that the pangs of hunger may be appeased, in a great measure, by the same means.

DECLINE OF THE DANCING PLAGUE.

After extending its baleful influences through all the countries of Europe, about the latter part of the sixteenth century it began to decline. Its attacks became milder, and were observed at greater intervals, although a writer of that day alludes to cases of extreme violence. He says the fury and extrav-

agance of demeanor of the patients so completely deprived them of senses, that many of them dashed their brains out against the walls and buildings, or rushed headlong into rivers, to find a watery grave. It appears, however, that such cases as these were of rare occurrence.

THE REMEDIES.

Until about the beginning of the seventeenth century, the dancing plague was made altogether the subject of religious treatment. Believing it to originate in unhallowed demoniacal influences, the church took special charge of the victims, and the priesthood made it their sole business to exorcise the evil spirits. While the people believed in the power of the church to cast out the malady, great indignation was also felt among them, because the belief had been promulgated that the frightful afflictions originated with innocent children, who had been baptized by unchaste and libidinous priests; and thus, in after years, they were made to atone for the sins of the unholy members of the church.

Physicians never undertook the treatment of the dancing mania. Against demoniacal disorders they had no remedies. It was observed that patients were violently affected by music, and that the paroxysms were increased by it. On this account, the magistrates hired musicians for the purpose of bringing the disorder to a crisis, and the priests encouraged the musicians to play at the altars of the saints, telling the patients that if they danced there they would be cured.

TARANTISM.

This form of the dancing mania prevailed throughout Italy. There is no question but that the malady bore a close connection with the St. Vitus Dance; and, although it was generally believed that the disease originated in the bite of a venomous spider called the Tarantula, the symptoms were almost precisely the same. The patients behaved like maniacs, throwing their arms about in the wildest manner. Commencing in spasmodic dances and music, (for which the inhabitants of Italy manifested more than ordinary susceptibility and talent,) they became capable of exciting in them ecstatic attacks, and these furnished the means of exercising their malady. Cities and villages resounded with the notes of fifes, clarionets and drums:

> "And there was songs and quavers, roaring, humming
> Guitars, and every other sort of strumming."

It was the general conviction that by music and dancing the poison was distributed over the body and expelled through the pores of the skin. As an evidence that the mania did not proceed from the bite of a poisonous insect, it was stated that inquisitive females joined the throng of dancers, simply to gratify their curiosity, and thereby caught the disease, and themselves became the victims. So many subjects were thus added to the crowds of sufferers that it became customary, early in the seventeenth century, for bands of musicians to travel from town to town, and from village to village, throughout the country, and institute carnivals on a

grand scale for the cure of Tarantism. These dancing festivals were in consequence called the "Women's Carnival."

The music employed was of various kinds, adapted to the different moods of the patients. There was the lively and impassioned, the sentimental, the grave and solemn, the spasmodic and exciting, and, in fact, all the grades most likely to meet the peculiar moods of the dancers.

It is thought by many that the St. Vitus Dance and Tarantism were different and distinct maladies. Tarantism was certainly cotemporaneous with the St. Vitus disease, and both evidently originated under the influence of the church, connected, as it was in those times, with all manner of superstitious notions, with public exercises of penance, and with innumerable practices calculated to excite the imaginations of its votaries and bring the mind into a state favorable for the reception of nervous disorders. The only difference between the disease as it appeared in Italy and the St. Vitus Dance, was that the people sought for the cause of Tarantism in the bite of a venomous spider, whereas its origin in other parts of Europe was attributed to the sins of unholy priests and various other mysterious causes.

So long as religious doctrines were blended with so much superstition these disorders prevailed, so that every country under the domination of the church was visited; and we find in our own day examples of similar diseases, though in a modified degree, in certain localities, where the enlightened views of the age have not penetrated, and with cer-

tain sects, still blinded by zeal, who madly labor to drag every weak mind into their toils.

> "No wild enthusiast ever yet could rest,
> 'Til half mankind were, like himself, possessed."

Combined with religious enthusiasm, imagination and sympathy exert a powerful influence over every passion and quality of the mind. The nerves convey the sensation to the spinal cord, the whole corporeal system is affected, and disease results; pre-existing disease is aggravated, and the foundation is laid for various malarious, contagious and epidemic disorders.

In our brief history of the epidemics of the Middle Ages, the close observer will discover the existence of a morbid sympathy, by the aid of which mental disorders may be originated and grow into real epidemics, involving the physical functions.

PART III.

HISTORY OF EPIDEMIC CHOLERA.

"It pauses to gather its fearful breath,
And lifts up its voice like the angel of death."

It is generally supposed that the disease now known as the "epidemic cholera" first made its appearance on the banks of the Ganges, in 1817. There is good authority, however, for believing that it had an existence at a much more remote period, and may have been identical with the modified form of the scourge called the Black Death, which devastated the earth in the fourteenth century. It is very probable that we are not acquainted with all the visitations of this fearful disease.

The first accounts which would seem to mark its appearance with any degree of positiveness are given by Dr. Bontius, a physician attached to the Dutch East India Company. His book was published in Batavia in 1629. In describing what he calls an epidemic cholera-morbus, he says: "It is a disease of the most acute kind, and, therefore, requires immediate application. The animal spirits are speedily exhausted, and the heart, the fountain of life, is overwhelmed with putrid effluvia. Those

who are seized with this disease generally die, and that so quickly as in the space of twenty-four hours at most. This disease is attended with a weak pulse, difficult respiration, and coldness of the extreme parts; to which are joined great internal heat, insatiable thirst, perpetual watching, and restless and incessant tossing of the body. If, together with these symptoms, a cold and fetid sweat should break forth, it is certain that death is at hand.

Although treating of what he called cholera-morbus, yet it can scarcely be doubted that the disease he describes was, in reality, the *spasmodic* cholera, and the account he gives of the death of a patient with this disease leaves no room for any other conclusion. In the case alluded to, he says the patient "was suddenly seized with cholera, about six o'clock in the evening, and expired, in terrible agony and convulsions, before twelve o'clock at night." This, then, appears to be the first well-authenticated record of the spasmodic epidemic cholera."

During the latter part of the seventeenth century, and until the year 1774, the cholera appeared to have confined its ravages almost exclusively to the Hindoos. Hindoo writers often speak of it, and Hindoo practitioners appear to have been familiar with its symptoms, or at least a disease closely resembling it, which they called "Vishuchi," a term in their language signifying vomiting and purging.

The term cholera is now used by universal consent, and was adopted at the very earliest period of the appearance of the disease in Europe. Cholera-morbus signifies that form of disease wherein the

bilious discharge characterizes the secretions from the bowels, and where the circulation is not unusually depressed. Spasmodic or epidemic cholera is that form of disease wherein bile and other natural secretions cease to flow, and where the pulse sinks or entirely ceases to be felt.

THE CHOLERA IN INDIA.

In no portion of the globe does this terrific disease appear in a more violent or fatal form than in India, the climate and scenery of which seem calculated to engender and keep alive the dreadful poison. Especially is this the case on the eastern coast of Ceylon.

"The mountains tower to a great height, in fantastic shapes or conical peaks, clothed from base to summit with almost impenetrable forests of lofty trees, underwood, and jungle. Deep vallies and ravines, still more thickly covered with similar materials, and choked up, as it were, with all the wild exuberance of tropical vegetation, separate the mountains from each other, and swarm with myriads of animals and reptiles. From these valleys, in the months of May, June, and July, when the south-west monsoon is in force, the gusts of land wind come down hot and sultry by day, but chilling, cold, and damp by night. Where mountainous and woody, or flat, marshy, and jungle tracts border on the sea, atmospherical dangers will be greater than where the coast is gravelly or dry and cultivated.'

During the months alluded to, when the south-

west monsoon passes with great strength over Ceylon, the wind by day is hot and sultry, and as soon as the dews have fallen in the evening, and evaporation commences from a very extended surface, the land breeze is instantly cold and raw; and being then loaded with vapor, together with all kinds of vegetable exhalations, penetrates our frames and systems with its deadly poisons. The effects of these atmospheric changes are fearful even to the natives.

The following digest of the report of the "Medical Commission" of Bengal and Madras embraces a period of forty-two years, from 1774 to 1817. The symptoms described so closely resemble the cholera of the present day that the identity seems almost complete.

THE CHOLERA IN MADRAS.

In the first campaigns of the British troops in India, in the year 1774, the cholera, presenting all the symptoms known to characterize the epidemic, made its appearance at Madras, and proved very fatal to both the European and native soldiers, carrying them off very quickly after they were attacked.

It is asserted, on good authority, that more than sixty thousand people perished between the years 1774 and 1781. The poorer classes were more frequently the victims, and it is stated that the native physicians could not save a single person. Those who were attacked had as many as thirty evacuations in from five to six hours. They were often without pulse. The hands and ears were cold, the face lengthened; the sinking of the socket of the eye was

the sign of death. They felt neither pain, cholic, nor griping, and were tormented with an intense thirst. This appears very much like the real epidemic cholera.

The disease prevailed at various times, between the years 1783 and 1790, and always with the same symptoms and with the same fatal results. In the latter year, it broke out in the English fleet stationed on that coast. At the various military posts it assumed a very violent character, and was rapid in its progress, the patients being taken off in twelve hours; and in some localities it proved fatal to all who were attacked by it.

From the year 1790, there appears to have been almost entire exemption from the epidemic cholera, until 1814, when it again made its appearance among the native and European troops. It advanced with frightful rapidity, and all who were taken down with it died.

Madras was again visited with two distinct and separate afflictions of the cholera—one in the year 1817, the other in the year 1819.

THE CHOLERA IN BENGAL.

The same disease, in all respects resembling the epidemic cholera, made fearful havoc with the British troops in Bengal, making its first appearance in 1781. Out of five thousand men seven hundred died in three days. Men in perfect health dropped down by dozens, and those even who were less severely affected

were generally dead, or past recovery, within less than an hour.

THE GANGES.

In the year 1783, the cholera broke out at the sacred bathing-place on the Ganges called Hurdwar. Every twelfth year it is deemed peculiarly obligatory on the Hindoo to assemble at this spot. This was the year for the great pilgrimage, consequently a far greater number than usual were drawn hither at this time. Two million pilgrims, it is said, were assembled on the banks of the Ganges.

"The disease broke out on the springing up of an easterly wind during the night, carrying off innumerable persons." In less than eight days twenty-thousand fell victims. It did not, however, extend beyond the place of bathing, and ceased upon the dispersion of the multitude. In 1790, the cholera, in a violent and fatal form, attacked the British troops and also the natives.

It appears evident that epidemic cholera prevailed at various periods, sometimes coming as a desolating pestilence, spreading its work of terror far and wide, and at other times confining its destructive influences to a particular locality or district. No visitation, however, of the disease approached, in duration, severity, and fatality, that which took its rise, in 1817, on the banks of the Ganges. These sweeping, desolating epidemics were unquestionably made the more terrible by the laxity in social and moral life. Under the improvements which have been instituted during the present century, the prevalence and

fatality of epidemics have greatly diminished; and from what has already been accomplished, we are satisfied that, by adopting proper social, moral, and sanitary reforms, the value of human life can be wonderfully enhanced.

THE CHOLERA FROM 1817.

From the year 1817, the character of the cholera has been so well defined, and its wanderings in search of victims have been so clearly traced, that no question has arisen as to its visitations or results.

By the end of 1818, its ravages embraced nearly all of Hindostan. It prevailed within the limits of the Himalaya Mountains on the north, Cape Cormoran on the south, Bombay on the west, and Sylhet on the east. In 1819, it appeared in Arracan, Peran, Java, and in the Isles of France and Bourbon, and over the whole of the Indo-Chinese Peninsula. The year 1820 found it in Siam, Malacca, the Philippine Isles, the southern provinces of China and Guzzeret in India, and Tiberius in Judea. It visited Muscat in 1821, Bagdad in Arabia, various parts of Persia, the Bahrian Island, and Borneo. During the winter of this year, it declined in Persia and Syria; but in the spring of 1822, again made its appearance, and ravaged almost every town and city of Persia.

In 1823, it broke out at Antioch, Tripoli, and all over the extent of the Mediterranean coast, the Spice Islands, and New Holland. It extended its dominions over the towns of the Caspian Sea, and the same year made its appearance in the city of Astracan,

near the mouth of the Volga. From 1823 to 1827, the disease continued its ravages throughout China, India, and in 1826 nearly depopulated several cities in Mongolia, traveling as far north as Siberia.

In 1828, the Russian empire was again invaded. The cold of the succeeding winter stayed its progress somewhat, but the summer of 1829 found it committing fearful havoc in the same localities. In 1830, it appeared in the Georgian cities, and again in Astracan and along the course of the Volga. It traveled into Poland this year, visiting its principal cities. From thence, along the borders of Prussia to Odessa, and to the White Sea. In the middle of September of the same year, it appeared in Moscow. In 1831, Warsaw, Riga, Archangel, St. Petersburg, Cronstadt, Dantzic, in Prussia, Brody and Lemburg, in Austria, Berlin, Vienna, fourteen towns in Hungary, Hamburg, and other places, in the kingdom of Hanover, were ravaged by the pestilence; and, in the month of August, it made its appearance in Sunderland, England. In December, it reached New Castle and Gates End. At about the same time, it appeared in different places in Scotland. London and Dublin were visited by the cholera in March, 1832. During the month of May, it prevailed, to a fearful extent, in Paris, and continued its devastations during the remainder of the year.

Its first appearance in the New World was at Montreal and Quebec, in the month of June, 1832. During its prevalence, the mortality from the disease was great.

The cholera appeared in New York, also, in June,

1832; in July, of the same year, in Philadelphia. Baltimore was invaded in August, and subsequently the epidemic reached many of the principal towns and cities in the United States, spreading consternation and dismay in every direction.

Since the year 1832, although occasional cases of cholera have been reported in different localities, no visitation of the disease took the form of an epidemic until 1849, when rumors of the scourge were again heard afar off. From Asia came the first note of alarm, as before. Over the same highways and byways its march was heralded, and with the recollection of its former hideous aspect, no wonder the people awaited its approach with fear and trembling.

The history of the epidemic of 1849, 1850, and 1851 is nearly a repetition of the events connected with the invasion of the disease in 1832. Its course was very nearly the same. It presented the same frightful and chilling appearance, and was equally as fatal, among the imprudent, the intemperate, the debauched, the uncleanly and filthy, as on its first appearance. Medical men had, however, profited by the experience of the past; had learned something of the characteristics of the disease, and, from observation and experience, were enabled to collect a vast amount of valuable knowledge on this most important subject. Their suggestions for precautionary measures, generally and individually, we believe, did much to lessen the mortality. Reflecting citizens were not taken by surprise, and were better prepared to encounter the destroyer. In this respect, the latter visitation of the cholera mate-

rially differed from that of 1832; and with the experience of the two visitations before us, we honestly believe that, should the cholera again appear in our midst, by publicly and individually adopting such measures of precaution as the lessons of the past have taught us are necessary to shield against its attacks, the mortality will be comparatively small. It will, in fact, appear only as a mild and easily-managed disease when taken in its early stages.

PART IV.

CAUSES OF CHOLERA.

"Where are your stores, ye powerful beings—say,
Where your aerial magazines reserved
To swell the brooding terrors?"

We know that climate, local circumstances, and the moral and social condition of the people, produce individual symptoms, but no definite conclusion can be reached as to the remote, the original cause of cholera. We study the peculiarities of epidemics, follow them in their erratic wanderings over the habitable globe, see them suddenly taking their departure from localities apparently congenial, and unexpectedly appearing where least looked for—again pausing in their fury, in the midst of their work of carnage and death, as if to gather renewed strength, and then breaking out at some point of their former track—we are bewildered at their inexplicable mode of journeying, and the attempt to account for their mysterious movements only serves to perplex and confuse our minds. It is quite impossible to give any explanation as to the original cause of cholera. We know enough, however, to convince

us that its remote cause is a subtle, poisonous, atmospheric influence, operating, probably, either upon the nervous system, thus affecting the organs of sensation and sympathy, and through them causing a depression of all the vital powers, or a specific poison acting directly upon the vital functions through the medium of the blood. In either case, the progress of the disease is so rapid that all the powers of life appear to be at once acted upon and extinguished. But while the original influence may invade the system and produce the "premonitory symptoms," such as looseness of the bowels and depression of the natural powers generally, the positive and fatal form of the disease is dependent for its destructive powers on a combination of the original with local causes. Derangement of the organs of digestion, no doubt, becomes an exciting cause. The atmospheric cause may of itself produce derangement of the digestive organs, and when a combination of causes act in concert, the disease hastens rapidly and surely to its final and fatal termination.

It may be laid down as a rule, that any disturbance of the mental or physical functions will be likely to affect the natural operations of the system, and lead to an attack of an epidemic disease during its prevalence. At another time, indiscretion in eating and drinking, over-exertion, sudden checking of perspiration, or excessive mental excitement, may produce entirely different effects. Cholera-morbus, rheumatism, headache may result; but when the cholera poison pervades the atmosphere,

these and other proximate causes, comparatively harmless during an ordinary state of the atmosphere, would act as a positive cause of cholera. This is an important consideration in the rules to be adopted for the prevention of the disease. The statement can scarcely be controverted, that epidemics are dependent for their destructive powers on local causes. They will fasten with peculiar severity, and hold on the longest in localities that have been neglected, and local diseases growing out of a lack of cleanliness, or proper sanitary precautions, are often the parent stock upon which epidemics like the cholera are engrafted and flourish. We have no plagues now to carry off a hundred thousand persons in four months, as did the Black Death in London; and simply because the filth, want, and misery that prevailed in the cities of the world during the Middle Ages, have been, in a great measure, removed. To this we owe our comparative exemption.

The mortality in London during the latter part of the sixteenth century averaged one-fourth part of the population, or what with its present number of inhabitants would amount to 375,000 deaths every year. During the cholera of 1832—the worst plague that has visited London since 1666—the deaths were only one out of 250 inhabitants. This decrease in fatality was due altogether to the improvements that had been made in regard to cleanliness.

What doubt there may be as to the nature of the cholera poison, there appears to be but little as to the point from which it emanates.

In the history of the cholera, it was stated that its

origin, in several instances, was traced to the pilgrims who visited the banks of the Ganges, in the observance of their religious rites. The present visitation of the pestilence appears to have had its origin in the same cause, as will be seen by a late report compiled for the Egyptian Government.

The havoc committed by the epidemic at Alexandria suggested official inquiries, and the President of the Board of Health addressed a communication on the subject to the Minister of Foreign Affairs, which deserves consideration. In this paper it is stated, as the opinion not only of the President himself, but of all the scientific and professional authorities in Egypt, that the poison is generated in the crowds of pilgrims periodically visiting the holy places of Arabia. Even the first origin of the disease is ascribed to the same source; and, whatever may be our view of the theory, it is impossible, after perusing a narrative of the facts, to deny the probability of the inference. The pilgrims congregate at certain periods of the year, from all points of the Mohammedan world, to the number of seven hundred thousand or eight hundred thousand. They are not of a class naturally either careful or cleanly, and on these occasions they are worse than usual. It is even a point of religion with them that no pilgrim should change his clothes during the whole time of his pilgrimage.

"Under these conditions, they are huddled together in enormous crowds beneath the fiery sky of the desert. It is an indispensable incident of the ritual that each pilgrim should sacrifice at least one

sheep, and the skins and offal of these countless victims are left to decompose under an Arabian sun. The result of all this is, that thousands of pilgrims perish on the spot, leaving their bodies to be shuffled hastily under a coating of sand, which the first sirocco will disperse, and their clothes to be packed up and carried off, as sacred relics, to be distributed among their relatives and countrymen. The Egyptian Minister thinks that here is the seed-plot and hot-bed of cholera, and there is certainly nothing improbable in the conclusion. He wishes, too, that the European powers would take into their serious consideration a practice which is obviously beyond the power of a Mohammedan Government to control."

The accounts from Constantinople, during the autumn of 1865, were of the most appalling character. The cholera, pursuing its usual course, had reached that place, and signs of panic were observed on every hand. "The spirit of fear conquered the spirit of Mammon. The bazaars were closed. Business was nearly at a stand-still, and the merchants shut themselves up in their country seats. You saw women, unable to resist the fascination of fear, looking eagerly out of their windows; and pedestrians shrinking back, and putting their handkerchiefs to their noses, as the coffins passed by. Bodies of those scarcely dead were thrust into coffins, and hastily hurried off for burial. You call at a shop; the master, or one of his hands, is groaning in bed. You go to visit a friend; he has just been buried. Processions of overworked priests fill

the streets and pray for the cessation of the pestilence. Five hundred, at least, died at Stamboul in one day."

The course pursued by the Turkish Government appears to have been but a repetition of the absurdities of the Middle Ages. The Sultan gave orders that all classes should make merry. So, bad brandy, raki, and Turkish music were the orders of the day. So, with the unceasing tramp of *hamals* carrying the dead, the streets resounded with monotonous twangings, drunken routs and howling. The weather was almost unbearable, the sun red hot. The wind brought neither freshness, nor the night coolness. In the sun the glass stood at one hundred and thirty-three degrees, and in the coolest places ninety-eight degrees. One thousand died daily. A young gentleman residing there says: "Having adopted a strongly astringent diet as a precautionary measure of safety, I went to make a call. Two persons had just died in the house. I rushed away to another. There were three dead there. Coming back, I met the dead-cart with at least one hundred bodies inside. Six medical men have succumbed to the disease."

This was in the fall of 1865. That the medical men died is not to be wondered at, when we learn that the Turkish doctors still adhere to their old prejudices against bathing, which they strongly and persistently object to. The correspondent further says: "As to myself, I am as well as usual. I eat in moderation, and bathe in defiance of the doctors." How like the horrible scenes related of

the fourteenth century is this picture: "I seem to be living in the plague of London, so much do the general features resemble what we read of those times. The little cemetery behind us is full of corpses, buried only a few inches under the soil, and the municipalities have forbidden any more burials there. Yesterday two large barges, as high as a first-floor window, were taken to the Golden Horn for burial. On the same day several hundred were thrown into the Bosphorus. Medical men, whether from fear or avarice, refused to attend the poor, and thousands died for the want of a little prompt assistance."

It will scarcely be questioned that the epidemic cholera is a disease originating in a specific principle pervading the atmosphere; this, acting in combination with miasmata rising from the earth, creates a positive poison, and this is productive of the same results whenever it comes in contact with the vital organs. But, while it produces but one disease, there are distinct stages of the same, the different stages, in some cases, being more or less merged into one; but in nearly every instance the peculiarities of each are plainly observable. How this atmosphere poison originates, or in what manner it attacks the system, we can only venture to express an opinion. We have said that it may act indirectly through the nervous system, thence affecting the organs of sympathy and sensation. Some distinguished medical gentlemen contend that it enters through the medium of the lungs. The discussion of the subject must be, after all, a mere

matter of speculation, and, consequently, to the general reader, devoid of interest or profit. The great fact, however, is well established, that a malarious poison does exist; that, combined with local causes, it operates with deadly power. By imprudence in living, fatigue, want of sleep, gorging the stomach with food, stimulating the brain with alcoholic drinks, giving way to fear, or, in fact, any irregularity having a tendency to derange the course of nature, the magazine is prepared with explosive material, only waiting the epidemic match to hurl its victims to destruction. Before I close this subject, I wish to impress upon the minds of all the necessity of being calm and collected in the event of the approach of cholera. Fear is a mental poison, and with the mysterious principle of evil that is wafted with the breeze and rides on the whirlwind, it has a deadly affinity.

CONTAGION.

"Obscure the seeds fate does unheeded sow,
Of slight beginnings, to such fearful ends."

The discussion among medical men as to the contagious or non-contagious character of the cholera, has been earnest and thorough, but by no means satisfactory. The majority of the profession, however, reject the idea of its being contagious.

During the epidemic of 1849 and 1850, my observations of the disease, in St. Louis, gave me an opportunity to form an opinion on this subject understandingly. After the pestilence subsided, I gave it

much thought and investigation, comparing my own experience with the facts which came to my knowledge from other sources; and while occasional circumstances appeared, at a superficial glance, to confirm the opinions to the contrary held by many very eminent medical gentlemen, nothing presented itself to my mind which, on due investigation, convinced me of the contagious character of the cholera. Cases occurred, now and then, which gave the advocate of the contagion theory plausible ground for argument; but, after all the circumstances were brought to light, not one instance of unequivocal contagion could be cited.

On the first irruption of the epidemic in St. Louis, a small steamboat was taken to Quarantine Island, a few miles below the city, and used for hospital purposes. Being found too small to answer the requirements of the case, after a short time she was replaced by a larger boat. Having been taken to the shore of "Bloody Island," opposite the city, and thoroughly fumigated, she there remained for a considerable length of time, an object of dread and fear to all who saw her. At length her owners succeeded in chartering her for a trip up the Illinois River, for the purpose of transporting a body of United States soldiers, on their way West. Shortly after she left the landing, the rumor was put in circulation that the boat had but recently been used for a cholera hospital. The soldiers became panic-stricken, and in the midst of the fearful scene of excitement that ensued, the cholera broke out in its most malignant and fatal form.

The officers participated in the general alarm; the boat was run to the shore, made fast, and deserted by every person who could leave it. The affrighted crowd scattered in all directions, making their escape as best they could, mostly in the direction of St. Louis. Many of the crew and soldiers, and several of the officers of the boat, were afterward found dead in the woods, having fallen while attempting to save themselves by flight. It was reported that twenty-two bodies were found on board.

How much is there in the facts connected with this case to sustain the theory of contagion? I can see none whatever. Yet, it was cited as evidence in support of the opinion, it being maintained that the sudden irruption of cholera was caused by infection from the boat. Is it not clear that the nervous excitement, caused by the rumors put in circulation among the crowd of soldiers that the boat had been a cholera hospital, was a powerful exciting cause? It is also probable that the soldiers were not as cleanly and temperate in their habits as was required for protection against the disease. These local causes, brought into active operation by fear acting in unison with atmospheric influences, unquestionably induced the attack.

Other instances occured which might appear to show the contagious nature of cholera; but, upon due consideration, it may be fairly concluded that, like the case noticed, there was a local, exciting cause.

During the autumn of 1859, a large steamboat, on

her passage up the river from New Orleans for St. Louis, was overcrowded with German emigrants, as deck passengers. The trip progressed favorably until their arrival at Cairo, at which place a quantity of castor-oil beans, in sacks, were taken on board. The deck passengers, under the impression that the beans would be a valuable acquisition to their scanty store of provisions, appropriated a portion to their own use. Having cooked and eaten of them, they were attacked with sudden and severe purging. Being entirely ignorant of the nature of the vegetable of which they had partaken, they were naturally much alarmed at these violent symptoms, and the only idea that suggested itself as the cause of their sickness was the cholera. The panic spread from the deck to the cabin, and the result was that when the boat arrived at the quarantine station the cholera was raging among the passengers in the cabin and on the deck, and quite a number fell victims to the disease. The idea of contagion is altogether incompatible with facts, and those who have been most familiar with cholera will scarcely entertain it.

The timid should divest their minds of all thoughts or fears of contagion. In this is their safety and exemption best secured. The promulgation of such a theory tends to create the very evil dreaded.

As an evidence of the non-contagious character of cholera consider the circumstances connected with its invasion of the New World. It first made its appearance in Montreal, and did not then wait for the usual modes of conveyance—the only channels

by which, if contagious, it could be carried—but it traveled with greater rapidity, and distant cities and towns were visited within a few hours, or, at most, days, of each other. It traveled, like the genii of evil, with the speed of the wind, and as erratic in its course.

If cholera is contagious why did it not come to this country, in 1832, with the messengers that brought the news of its existence in European ports? How did it get here in advance of these messengers? In what way was it communicated to ships in mid-ocean which had left healthy ports? Such was the case, and, in one instance, nearly one-half of the passengers and crew died. Having appeared in New York, how was it taken to our Western towns and cities before any other conveyance could reach them?

The reader can consider these queries in his own mind, and, in doing so, he will scarcely fail to see the impossibility of cholera being communicated by contagion.

ELECTRICITY.

Electricity has been suggested as a cause of the cholera. This subtle power is known to pervade all creation. Space and organic matter, alike, are under its influences; but what can have given rise to the idea that it is the cause of malignant disease, we are at a loss to conceive. It may be intimately connected, in some mysterious way, with the disorders with which humanity is afflicted, but with as much reason may we believe it to be the original cause of

sin, the primary cause of evil, as to contend that it is the cause of this death-dealing malady. Of the true properties of electricity, we are, as yet, ignorant. We find in organized bodies a capacity to produce, under certain circumstances and conditions, the principles of light, heat, and electricity. Nearly all animals have the power of producing heat. Many insects voluntarily emit light, and the power of producing electricity is shown in the terrible shock of the electric eel. We also find the effect produced by other creatures. Under different circumstances, electricity is known by different names; but the principle is the same every-where, and pervades all created things; and we may well, therefore, believe that it is concerned in every action, every motion, of our existence. It may be an agent all-powerful in producing disease. Admit this to be the case. The admission is but a conjecture altogether hypothetical, and beyond the present limits of human knowledge to substantiate. The subject is too profound for our investigation and understanding, and, therefore, its discussion is necessarily unprofitable.

ANIMALCULAR THEORY.

Some learned men have attempted to trace the cause of cholera to an infinity of animalcule pervading the atmosphere, carried hither and thither by the wind, and equally as capricious in its wanderings. This they maintain is the reason why it often passes over certain villages without attacking them. The

animalcules, when propelled by a violent storm, are retained at a distance from the ground in exactly the same manner as locusts, which, carried by the wind, traverse certain localities without committing the slightest ravages. This, in their opinion, is also the reason why the epidemic first makes its appearance in the night; at that time the wind abates and the animalcules are deposited.

In conclusion of this subject, the nature of the cholera poison is, and probably long will remain, a matter of conjecture; so, also, as to the manner in which the subtle agent acts upon the system. Theories may have the appearance of plausibility, yet, after all, it is still so impossible to comprehend the mode of action, or the powers brought to bear to produce the terrible result, that the mind seems to find relief in the obscurity in which the subject is enveloped.

That the first direct action of the poison is exerted on and through the nervous system appears quite reasonable, from the fact of the susceptibility of the nerves to external impressions. Eminent physicians maintain that the virus exercises its baleful influence directly on the blood, through the medium of the lungs, and, thus distributed through the system, produces the physical charges which constitute the primary symptoms of cholera. This theory may also appear rational; but in neither case have the facts been positively shown. Even the existence of a poison is only inferred from the necessity of supposing an adequate cause for a sudden and fatal derangement of the functions of life. We are unable

to detect its presence in any positive form, but judge of its existence by a long series of analagous effects.

We have, as yet, so little to direct us, so far as a positive solution of this question is concerned, that it must remain undetermined whether the primary cause is disseminated through the nerves or some other organs. If the brain and nerves are concerned, it can only be as a medium to transmit the impression made on them, by the poisonous agent, to the other parts of the system. The nerves themselves can not be affected, for it is a noticeable fact that, in cases of cholera, "the mind sits unimpaired and serene amid the ruins of organic life." Breathing is only performed as if by a muscular effort. The pulse ceases to throb; even the beating of the heart can not be detected, and yet the mind is active and vigorous, and calmly contemplates the wreck of its mortal tenement. The functions of the brain appear to be undisturbed, while the heart, the lungs, and organs of life, are involved in a chaos of disordered action. Well-authenticated reports have been made of cases in which the sufferers lived two, three, and even four days after the pulse had ceased to beat. I have seen one—that of a strong, robust man, 38 years of age—who was attacked on the morning of the 10th of June, 1851. The same night, about 12 o'clock, pulsation at the wrist ceased, and he remained in this condition sixty-four hours. During this time, although his voice was strangely hoarse, he conversed freely and intelligibly until within a few minutes of his death.

The patient is generally acutely sensible of ex-

ternal application, and expresses a consciousness of pain on the application of heat to the cold and apparently lifeless limbs. He is aware of all that takes place in his presence. In fact, the operations of the nervous system are continued to the very last moment of life.

I may have digressed somewhat occasionally, and repetitions have also occurred, but the reader, I trust, will excuse me. My aim is to present the subject in its various phases, and, in a familiar way, to reduce the matter to as comprehensible a form as possible, and, in doing this, I may sometimes make note of a fact or allusion to an idea that has been previously advanced. I ask a little indulgence in this respect. In seeking for the cause of cholera, let us not deceive ourselves with any theories or opinions, however plausible they may appear. We see electricity operating through space, pervading all organic matter, yet we can not comprehend its nature. The mystic power that spreads disease and death in the form of cholera is alike beyond our conception. It moves here, there, every-where; seemingly a malarious, ubiquitous fiend. It is vain for us to attempt to flee from it, and equally vain to bar its progress by quarantine regulations. It is in the air we breathe. It has unbounded range over the face of the earth, and as well may we attempt to stay the lightning's flash as to arrest the cause of cholera. It is not a thing to handle, to cage, to put aside, but a malicious, malignant principle.

But, although the cause of cholera is subtle, intangible, and beyond our reach, it has its laws; and

we have been taught, by the experience of the past, that one of its laws is to manifest itself wherever pestilential miasmata invite or mental infection prevails. Our duty, then, is plain. Act on the most reasonable sanitary suggestions presented for your consideration. Be governed by the advice we shall hereafter give in regard to eating and drinking. Be calm, and, without fear, do your duty toward each other when called on to render assistance to the afflicted. "Do unto others as you would have others do unto you." Never be deterred from doing kind offices for the sick by fear of contagion. Remember, when the victim is first stricken down every moment is precious. A life depends upon your aid at the proper moment. Purify the physical and moral atmosphere in which you move, and, depend upon it, the cholera will be disarmed of its most deadly weapons.

PART IV.

SYMPTOMS OF CHOLERA.

"I run the gauntlet of a file of doubts,
Each one of which down hurls me to the ground."

Unlike almost every other epidemic disease, the premonitory symptoms of cholera are variable and uncertain. It has been a noticeable fact, however, that diarrhea and other complaints of the bowels have very generally preceded a visitation of the cholera; but as there are times and seasons when this laxity of the bowels prevails quite extensively without being followed by the epidemic cholera, we are very liable to be indifferent to the admonition, until too late to ward off the more serious malady. Diarhear, sickness of the stomach, a general feeling of lassitude, is a condition of the body which, in times of anticipated attack from cholera, should not be overlooked.

The cholera, in three cases out of four, makes its attack at night and in the early part of the day. I mean by this the malignant symptoms. The premonitory indications may have existed for days unheeded, and the victim retires to rest unconscious of the lurking devil within him. Suddenly he is

awakened with a sense of nausea, oppression, or a feeling of emptiness of the stomach, followed almost immediately by a desire to evacuate the bowels. A chilly sensation creeps over the whole body; vomiting and purging now set in. If the patient has been for some days troubled with a diarrhea, or looseness of the bowels, the discharges will have the appearance of rice-water, with a small amount of loose, mucus-like matter, which soon falls to the bottom of the vessel, leaving the fluid thin, resembling slightly discolored water. If no premonitory diarrhea has occurred, the first discharges will be filled with the fecal matter of the bowels; this having been evacuated, the watery discharges will immediately follow. The matter vomited from the stomach will be, first, what remains of indigested food. This having been thrown off, the subsequent appearances are the same as that evacuated from the bowels. These operations from the stomach and intestines are not always accompanied with pain or distress, though frequently in a slight degree; but very often there is experienced only the prostrating effect resulting from vomiting. The next symptom will be intense thirst, continually increasing and torturing the patient as the disease advances. A general languor and listlessness, characteristic of indifference, will succeed. The pulse increases in frequency, but becomes more and more feeble, and may, at this or any subsequent stage of the disease, cease to beat altogether. The skin loses its natural warmth; the nose and ears become cold. The patient will be sensible of a stiffness of the joints. He is disposed to rest, and desires to be

undisturbed. Sometimes he speaks of a slight dizziness and a ringing in his ears. About this time, the muscles over the abdomen are found to be hard and contracted, in some cases; in others, the belly remains soft and natural. The feet and toes now begin to contract spasmodically; sometimes the hands and fingers are affected, and occasionally spasms are noticed in the muscles of the body. If the pulse has not already ceased, it will gradually become smaller and quicker.

Perspiration breaks out freely, profusely increased by every effort to vomit. The body becomes colder, and imparts no sensation of warmth to the touch. The sufferer is restless, and continually moves and throws himself about. The skin around the fingers and hands shrinks, and is drawn into ridges; and the same appearance is frequently observed on the feet and toes. This gives the patient the appearance of great emaciation. From this cause, I have seen a ring fall from the finger, which had been worn for years, and that could not before be removed. The countenance changes from its indifferent to an anxious appearance, and at this stage indicates pain and suffering. The features are shrunken and contracted; the eye sinks into its socket; the nose is pinched. Pain in the abdomen is evident. Breathing becomes labored and difficult, and is accompanied with a sigh or murmur. The skin changes to the color of lead. The patient will complain if heat or stimulating applications are applied to the skin, although the entire body will be as cold as marble; and yet, though acutely sensible to the application of heat

or stimulants to the surface, caustic, or even boiling water, will not affect the skin or raise a blister. Water! water! to quench the thirst, is the almost agonizing cry of the sufferer.

The tongue is most frequently coated in the center, and clean, with a raw, red appearance at the tip and edges. The condition of the tongue, however, varies very much in different cases. It is generally moist, and always cold, its temperature, and that of the mouth, regularly decreasing as death approaches. The breath also conveys the same sensation of coldness, indicating an absence of internal warmth; and yet if, at this time, the hand be applied over the region of the stomach, it will almost invariably be found considerably warmer than in health. The voice is feeble, and sinks to a whisper. The patient will pass no urine from the attack to the termination of the disease, and occasionally will speak of this circumstance as something very singular, when near the point of death. Sometimes, with his body cold, shriveled, pulseless, and when at the very moment the last lingering vital spark is about to expire, he will express a desire to walk for the relief of his sufferings.

The symptoms described represent the common progress of the epidemic cholera from its first malignant indications to its fatal termination. Varieties in the symptoms occurred under my own observation, but the prominent features of the disease were very nearly the same.

The premonitory symptoms, in some cases, have been altogether wanting. For such patients little

can be done. If, however, they were susceptible to the action of remedies, the alarming symptoms would abate simultaneously. The pulse would rise, the features expand, purging and vomiting cease; a warm glow would spread over the system, the urine begin to flow, and sometimes the tongue, which may have been thickly coated, will, in a very short time, assume a clean and healthy appearance. In other cases the fur on the tongue will increase, and the secretions will slowly and almost imperceptibly resume their natural flow. With such patients, no time is to be wasted. Whatever is to be done must be done quickly; and if a recovery is to be effected, the returning state of health must be carefully watched. The recovery will be slow, and the slightest indiscretion will bring on a relapse, in which event death is next to certain.

Where there is a total absence of premonitory diarrhea, such cases are exceptions to the general course of the cholera. We do not, however, consider the diarrhea as one of the stages of the cholera; but, from the peculiar condition of the choleric atmosphere, or from some other hidden cause operating at this time, looseness of the bowels prevails extensively, and is found to precede the malignant disease. Diarrhea may become an exciting cause. The discharges from the bowels during this preliminary diarrhea are of an entirely different nature from those of cholera; they are thin and watery, as is the case in looseness of the bowels at any other time; but there is a discoloration, indicating the presence of bile. In cholera the bile ceases to flow.

This is a distinguishing feature of the disease. "Premonitory diarrhea" is the result, sometimes, of atmospheric influences, brought into action by local causes. It may, if neglected, become an exciting cause of cholera. Abstinence and mild treatment, at the proper time, will enable nature to effect an escape from the more terrible disease; but if neglected for a day, or even an hour, it is converted into a perilous malady, which, though but for a moment in a state of incubation, will baffle the efforts of nature and art to subdue.

During the prevalence of cholera the operations of the bowels should be carefully watched. Diarrhea will yield to remedies; cholera, seldom. Diarrhea may become the exciting cause of cholera. Never allow it to run into the malignant disease.

ESPECIAL FEATURES OF CHOLERA.

The peculiarities heretofore mentioned may not be usually found in individual cases, but will be observed in the general run of the epidemic. One case may be distinguished by the absence of vomiting; another by the absence of purging. Spasms may not always occur, and sometimes all of these symptoms may be wanting, the disease being ushered in with a deathly coldness, a suspension of circulation, very slight commotion of the functions, the patient passing away with scarce a struggle. It is a fatal form of the disease, fortunately exceedingly rare.

PURGING.

This symptom is seldom absent altogether. It is generally the first indication of an approaching attack of malignant cholera. It is not always, however, the first symptom that attracts our attention, because it is liable to be mistaken for an ordinary call of nature; whereas, vomiting is at once noticeable as a departure from health. In cases where little or no purging has taken place, the attack has been peculiarly malignant. The evacuations are sometimes made without effort, the contents of the bowels passing off almost unconsciously. Again the discharge takes place with great force. Sometimes purging, vomiting, and spasms occur simultaneously, as if each originated from the same cause. Ordinarily, the calls are sudden and irresistible, accompanied only with slight pain in the abdomen. In the advanced stage of cholera the bowels are often relieved unconsciously, the watery fluid passing from the body on the least movement or change of position. The matter evacuated is usually inodorous and colorless. It is, however, sometimes of a frothy appearance, but invariably free from the slightest trace of bile. The reappearance of bile in the stools is a favorable indication, as this does not occur until the disease has been subdued. The amount of watery fluid evacuated is no evidence of the fatality of the case. In some instances, where the discharge has been enormous, patients have recovered, and in others they have died after a very slight evacuation.

This fact should be borne in mind. Many an attack of cholera has occurred, and many lives have been lost, by not attending promptly to the first indications of purging. Whenever a looseness of the bowels occurs, be on your guard. Whenever the first watery discharges are observable, be prepared to check the advance of the insidious destroyer, or immediately apply for medical aid.

VOMITING.

Vomiting is one of the most prominent symptoms of cholera. In few instances is it altogether absent; yet such cases do occur. Immense quantities of watery fluid pass from the stomach, differing but little, after the first contents are discharged, from the evacuations from the bowels. Sometimes the stomach appears to be in a lifeless, sluggish condition, incapable of throwing off its contents, and there is a painful straining to vomit. Fluids swallowed are thrown off, as if by a spasmodic effort of the passage, before reaching the stomach. At other times, the stomach appears to retain whatever is poured into it, as if it were an India-rubber sack. This is a most alarming symptom, and indicates, almost surely, a fatal termination.

Sometimes, at the beginning of an attack, bilious matter is vomited. This is only what may be in the stomach at the time. The watery ejections then follow, and the appearance of bile is a favorable indication.

INTERNAL HEAT AND THIRST.

This, like the symptoms already alluded to, is sometimes wanting. It is generally observable, however, after the vomiting and purging have continued a short time, and from its first appearance to the death of the patient it becomes more intense and aggravating each moment. While the sufferer is tortured with this insatiate thirst, while there is an agonizing burning heat within, the mouth and tongue are cool and moist. Rarely, indeed, is the mouth or tongue parched or dry. This thirst is ungovernable, and even with the belief that to assuage it with cold water will be death, the poor victim will eagerly drink, if within his reach. There is no symptom that more clearly shows a general constitutional derangement than this failure of the natural heat of the system. It is one of the first symptoms, and exists in every part, except immediately over the pit of the stomach and the region of the liver, where heat is maintained to the last moment, and after all the other organs of secretion are involved in disease.

SPASMS.

The contraction of the muscles of voluntary motion is what is meant by spasms in a case of cholera. This symptom is also often wanting.

The muscles generally affected are those of the toes, feet, and calves of the legs, and the thighs, arms, hands, and fingers; sometimes, also, those of the belly and chest. These last are the cause of

great distress. Hiccup is sometimes an accompaniment, but is not considered an indication of danger. The muscles of the belly are sometimes drawn violently in toward the spine. Spasms are invariably attended with pain. After recovery, the twitching of the muscles have been noticed several days, and this spasmodic action has continued for some time after death. Spasms occur most frequently in the robust subject; also the intemperate. Males are affected more than females; children seldom. The fingers and toes are distorted in every direction, and the limbs thrown about with great violence. During these spasmodic convulsions, the patient will often leave his bed and endeavor to walk, in the hope of obtaining relief.

COLLAPSE.

This is the characteristic symptom of cholera. It always presents itself, unless the measures adopted for the relief of the patient have been successful in warding it off. In that case, the progress of the disease has been interrupted, and the remedial measures, if continued, will lead to recovery. In all cases of genuine malignant cholera a drainage of the system commences, through all the vessels and channels of the body, from the first moment of the attack, and the effect of this will be observed in the gradual diminishing of the natural heat of the surface, accompanied by a shrinking and contracting of all the organic members. This symptom may be modified, in some degree, where the patient has been under the excitement of spirituous liquors, or

other powerful stimulants at the time of attack, and in such cases inflammatory indications may be observed for a short time, but they will surely ābate, and the patient will sink into a final condition of collapse. The pulse will sometimes continue quite strong for a few hours, but seldom is such the case. Even during the action of evacuating the bowels the reduction of its strength is sometimes very apparent. It generally continues to grow weaker and quicker as the disease advances. Most likely, on the occasion of an attack of vomiting or purging, it will cease to beat altogether. Sometimes, when the vomiting ceases, the pulse will return for a short time, but again disappears; and in this pulseless condition, as we have already stated, the sufferer may live three and even four days. Rarely, however, does this asphyxiated or pulseless condition continue beyond a few hours.

THE SKIN.

The exhaustion of the system, in consequence of this terrible drainage by vomiting and purging, does not appear to affect the pores of the skin, for, although the temperature gradually diminishes, the perspiration is often very profuse. A remarkable condition of the skin is invariably observable. While it loses none of its sensibility, it can not be affected by the most active irritants. Even boiling water fails to produce any observable effect upon the skin, while the poor tortured sufferer feels all the pangs he would from the same application in health. Yet the marble coldness remains, and, to all appearances, the flesh is but dead matter.

The skin, though moist with perspiration, is cold, and imparts a death-like chilliness to the touch, and this coldness extends over the entire body, with the exception of the pit of the stomach, but not in the same degree in the region of the abdomen as in the extremities. If the skin of a patient, in a state of collapse, is pinched, it retains the indentation made for a considerable time; the fingers and toes, and sometimes the hands and feet, are corrugated, assuming the appearance of ridges or furrows. If the sweating is profuse, the fingers and toes are greatly reduced in size.

The color of the skin usually changes to a leaden hue, generally extending over the entire surface. The hands, feet, and lips are of a deeper shade, with but little discoloration about the eyes. Sometimes the leaden or bluish color is distributed in patches over the body and face. In occasional cases there is no striking change of color, and sometimes the discoloration will appear and disappear.

THE COUNTENANCE.

In the collapsed stage of cholera, the countenance of the subject can not be mistaken. In most cases there occurs a shrinking of the features; the eyes sink into their sockets, and are generally dull or listless, unless roused by some remark or circumstance to attract attention. At other times, during the intervals of pain or spasms, the patient remains inanimate, with the eyes fixed and motionless.

The cheeks appear sunken, the nose sharp and pinched, the muscles of the eyelids are not convulsed,

and there is scarcely any winking. The never-changing eye is fixed, as if looking away into the depths of that unknown world to which the sufferer is speeding his way.

BREATHING.

In general there appears to be no difficulty or interruption to the respiration. A sense of oppression is sometimes observable, however, and the process goes on slowly. An instance is recorded where this action took place only seven times in a minute. Breathing is rarely attended with distress; but there appears to be a labored effort occasionally to respire, and this will cause the patient to be restless and uneasy, turning and throwing the clothes from him. Fresh air affords relief, and gives the sufferer rest for a time. The remarkable coolness of the breath is a uniform symptom of the collapsed stage, and, in the later periods, comes from the lungs as if from an iceberg.

RESTLESSNESS.

This may be considered an unfavorable symptom, though not always present in fatal cases. Sometimes the patient passes through all the changes of the disease with little disquietude, and death approaches while apparently awaiting his embrace with complete tranquillity. Probably the restlessness so frequently observable results from oppression in the action of some particular organ. When the patient is quiet, and disposed to rest easy, it may be considered a favorable symptom, though by no means an indication of recovery.

THE VOICE.

The tone of the voice is generally unnatural, but not invariably so. Sometimes it is hollow, and reaches the ear as if coming through a long tube. Sometimes it is feeble, and but a whisper. Again it may be hoarse, rough, and unnaturally strong. When the voice is strong, speaking appears to produce no exhaustion. In some there is a decided inclination to converse freely.

THE TONGUE.

The condition of the tongue is no positive indication of the state of the patient. If there has been much diarrhea previous to the attack of cholera, the tongue will probably be a dirty white in the center, and clean at the edges. The state of the tongue during the preceding diarrhea will be so variously modified in the attack of cholera, that little reliance can be placed upon it. Those who have observed the condition of this organ the closest, consider an approach to the natural state unfavorable, and a thick coating an encouraging symptom. Accumulations of dark, foul matter about the teeth are the forerunners of death. The most uniform indication in connection with the tongue is the gradual reduction of heat. The tongue will remain moist, the temperature decrease, while the patient begs for water to allay his thirst.

THE URINE.

The flow of urine is, from the commencement of the attack, entirely suspended, in nine cases out of

ten. If this secretion appears during the progress of the disease, it is usually in small quantities, and free from discoloration. The passage of urine, under these circumstances, does not denote a more favorable condition than when altogether suppressed; but if the urine reappears, after having once ceased to flow, it may be regarded as an encouraging indication.

THE BLOOD.

The condition of the blood, and its circulation, indicates the most positive change in the progress of cholera. Blood can only be drawn with difficulty from the veins of persons in an advanced stage of cholera. The small quantity that escapes is of an unnatural dark color and thick consistence. It is generally described as tarry, ropy, or like syrup. The change in the condition of the blood appears to be going on from the commencement of the attack. It is drained of its watery particles by the discharges from the stomach and bowels, until it becomes thick, and ceases to flow through its natural channels. The veins and arteries of the extremities are collapsed and entirely emptied, and the larger vessels are choked up with the thick, semi-fluid mass. The attempts that have been made by distinguished medical gentlemen to restore the natural condition of the blood, by injections into the veins of various solutions, and also of blood from a healthy person—called "transfusion"—are of the most interesting nature to the student, but to the general reader would be devoid of interest.

SENSIBILITY.

The hearing appears to be more affected than any other sense. My impression, however, is, that the temporary deafness and ringing in the ears, complained of by some, is almost invariably confined to those persons addicted to the intemperate use of spirituous liquors, or tobacco-chewers and inveterate smokers. As I have before observed, the sight seldom seems to be affected, and if at all, only by a transient dimness of vision. The taste is not always acute, but is generally correct and sensible of the contact of an irritating dose of medicine. The sense of smell I have not noticed particularly, though I remember a patient once remarking on the odor of a nauseating drug, which he was about to swallow. I have already noticed the acute sensibility to pain. The sense of feeling is certainly in no degree impaired. It is very evident, therefore, that the nervous system is less affected than any other of the functions of life. This is especially surprising when we consider the large quantities of stimulating, stupefying, and other drugs usually administered. The patient may sink into a state of lethargy toward the termination of the case; but he is aroused on being spoken to, will answer intelligibly, and again sink into a state of stupor. It is not always easy to determine how much of this condition is due to the opiates he may have swallowed.

LISTLESSNESS OR INDIFFERENCE.

A singular condition of indifference is generally noticeable in the cholera subject. Previous to the attack, his fears may have been excited; he may have manifested alarm and dread on the approach of the pestilence; but, on being stricken with the malady, he becomes wholly indifferent, or seemingly so, and the nearer he approaches the fatal termination, the less regard for his life does he exhibit. This apparent apathy has been attributed, in some instances, to a disinclination to acknowledge, even within his own mind, the near approach of death. This peculiarity is so frequent and so uniform, that it must arise from another cause connected with the disease; and so much is the patient under its influence, at times, that great difficulty is found in prevailing upon him to take the remedies prescribed, the necessity of it not being apparent to his judgment. Though before the attack alarmed, he is fearless now; and this feeling of security, or indifference to the result, grows with the progress of the disease. After the fatal stage has been reached, seldom is the least solicitude manifested as to the result. Indifference is a symptom of cholera.

TERMINATION OF CHOLERA.

The tendency to a fatal termination is so great in cholera, that experienced practitioners are of the opinion that no subject can recover if the disease is left to run its course. Nature seldom effects a cure

unaided by art. Even the skill of the physician will be unavailing, unless applied at the earliest possible moment. Hours are of more importance in cholera than days in ordinary diseases. The mortality in all countries and with all systems of practice has always been very great. The reputed cures of cholera under certain modes of treatment, or in the hands of certain practitioners, are derived from cases taken in the earlier stages only, or when the epidemic has spent its force, and has assumed a milder and more tractable type. The first appearance of the cholera epidemic is the most formidable, and the skill of the ablest practitioner is baffled. The earlier cases combat with medical science with singular obstinacy, and the sad experience of the physician gave rise, in his mind, to the conviction that all remedies and all efforts would prove ineffectual. In the fully developed disease scarcely any treatment is of avail. We may surely say, then, that the apprehended result of malignant cholera is always unfavorable.

As the epidemic dies out in a community, it assumes a milder and more manageable form, easily controlled by remedies which, a few weeks or even days previous, were prescribed and proved ineffective.

It is in these modified cases of cholera that many practitioners have earned the reputation for their reputed cures.

While the epidemic rages in its malignant form, the physician who saves one patient in six does well. All his chances of success decrease with every minute lost. Active treatment at the very outset

of the disease is the only course for a favorable termination.

When the collapsed stage has fully become established, there can be no other than the most fearful apprehensions.

Accumulations of foul matter on the teeth denote the approach of an unfavorable result.

The patient will not recover if the temperature of the mouth falls below ninety-three degrees.

Profuse sweating indicates death.

A cold or sour breath is fatal.

Continual turning, uneasy movements and restlessness forbodes a fatal result.

If the cholera is complicated with any important disease of the internal organs, death is certain.

The dissipated and intemperate almost invariably die.

The aged seldom recover.

Youth, if robust and of full habit, recover from the collapsed stage in many cases, and subsequently die of congestion of the brain. This danger is to be guarded against in all cases.

The indications of recovery are when the vomiting and purging cease.

An increased fullness of the pulse.

A restoration of the natural warmth of the body.

Almost any change in the color of the discharges from the stomach and bowels is auspicious, especially if it is of a darker shade and of the natural offensive odor. If the urine reappear, it is one of the most favorable symptoms that can be observed.

Recovery under the most favorable circumstances

will generally be slow, and often embarrassed by the setting in of local inflammation or congestion, presenting many of the symptoms of typhus fever. These tendencies are to be carefully watched. The brain, the liver, the bowels, or the stomach may be the seat of the inflammatory attack. The pulse will become hard and full, the skin dry and hot, the tongue furred, the feet flushed, and sometimes delirium will set in.

The fatal termination of cholera results from a suspension of the natural functions, and the diminution and gradual extinguishment of the vital powers.

The favorable termination of cholera is simply a restoration of those functions and powers—a change which is usually very apparent whenever it takes place, and which often occurs when the case promises little hope of recovery. The transition is hailed with joy. Friends are delighted with the visible development of the newly-restored functions of life. The action of the heart is felt, and the arteries throb with promise of their wonted vigor. The returning heat warms us with hope, the features expand, the leaden hue of death is exchanged for the flush of life, and we congratulate ourselves with the pleasing thought that the sufferer has been snatched from the jaws of death.

PART VI.

REMEDIES TRIED.

"When nature can not work, the effect of art is void,
For physic can but mend our crazy state,
Patch an old building, not a new create."

When the epidemic cholera first made its appearance in this country, in 1832, each practitioner went forth to battle with the mysterious, unknown enemy with such weapons only as his hasty reading or ingenuity suggested. The variety of treatment adopted indicated the uncertainty of their conclusions. They had the recorded experience of physicians in Asia and Europe to refer to for information; but it was very early discovered that the remedies applicable to the disease in the Old World were not in all cases appropriate here. The whole range of the Materia Medica has been ransacked and almost every new drug tried, and, as sad experience has shown, with remarkable inutility, with but very few exceptions.

At the outset of the epidemic, it was the unpleasant task of the practitioner to grope in the dark. Unexpected was the invasion of the scourge, and unprepared it found all alike—the victim and

the physician to whom he looked for aid. Byron truly represented human nature when he wrote,

> "'T is said physicians mend or end us,
> Secundum artem; but, although we sneer
> In health, when sick, we call them to attend us,
> Without the least propensity to jeer."

Physicians were called to attend the suffering and dying, and relying upon their own judgment, in connection with their daily experience, they gave the remedies prescribed by the medical men of Asia and Europe a full and fair trial. The practice, however, laid down by them has been very much modified. Among the remedies made use of and recommended are the following:

BLEEDING.

In India, where the cholera was generally ushered in unheralded by the premonitory diarrhea, blood-letting was resorted to in the early stages with beneficial effect; but, except in occasional instances, it has failed to realize the hopes of the practitioners of this country. It is evident that bleeding, to be productive of good results, must be resorted to before the watery portion of the blood has been drained from the vessels. It is said that when the subject is robust, bleeding, if resorted to within one, two, or three hours after the commencement of the attack, will be successful in cutting short the disease, by allaying the irritability and checking the spasms. I have never resorted to bleeding, and doubt its efficacy, except in cases where inflammatory or congestive symptoms are observed.

CALOMEL.

So far as the experience of the past is to be relied on, calomel transcends all other resources in the treatment of malignant cholera. This opinion is sustained by that of the best physicians in this country and Europe. It allays irritability of the stomach and intestines, and induces a change of action in the liver, which is instrumental in restoring health. To be effective it should be given in full doses. If the case be susceptible of relief, it will correct the discharges, changing them from the characteristic rice-water appearance to a darker color and thicker consistency. This change, should it be effected, is an omen of good. Spasms will be mitigated, and all the functions will be improved.

OPIATES.

For a time, opium, and its preparations of morphine, was considered almost as a specific. It was administered freely, and in large doses, alone and in combination with other remedies. Subsequent experience has, however, led to the conclusion that opium, although comparatively inert for a time, exerts a decidedly deleterious effect upon the vital powers, having a tendency to check the operations of nature in the struggle to regain its healthy condition.

Opiates, then, should not be given except in the stage of premonitory diarrhea, and then only in small quantities.

CAMPHOR.

Camphor has had its warm advocates, but as a remedial agent it is useless. It is beneficial, perhaps, combined with calomel, in subduing the irritability of the stomach and bowels, and, perhaps, has a tendency to check the spasms in the advanced stage. It is useful in combination with carminatives, stimulants, and opiates in the premonitory diarrhea. It should never be given during the collapsed stage, on account of its determination to disturbance of the brain.

INTERNAL STIMULANTS.

Stimulants, administered internally, have been used very freely, and in all stages of the disease. So far as my observation goes, I have seen but little benefit from the use of alcoholic stimulants, except in small quantities. It has been a mistaken idea that brandy, combined with cayenne pepper and other powerful stimulants, should be administered liberally. Much harm has resulted from such a course of treatment. The failing powers of life, the languid state of the circulation, the diminished heat of the body, would seem to suggest the use of stimulants; but they are contradicted by a knowledge of the disease, and of its tendency to local developments—inflammation and congestion. It is very difficult, however, to resist the inclination to give a warming, stimulating draught to the patient sinking from apparent lack of natural heat and vitality.

Brandy and water may be used in moderate doses to allay the vomiting and sickness at the stomach. Brandy and strong coffee have been also recommended.

EXTERNAL STIMULANTS.

Stimulants of every kind have been employed on the surface of the body, abdomen, and the extremities. Mustard plasters are useful, and while there is any chance of making an impression, they may be used to advantage. Strong mercurial ointment, combined with cayenne pepper and camphor, was much in use, both in hospital and private practice, during the cholera of 1832 and 1850. This was applied to the entire surface, and the skin afterward covered with hot pulverized chalk or potter's clay. This treatment, in connection with calomel internally, is said to have resulted beneficially in a large number of cases.

HEAT.

Heat is frequently applied externally, by placing around the patient bottles of boiling water, bags of hot sand, steam and hot-air baths, and various other methods devised for that purpose. My impression, however, is, that a stimulating ointment is preferable to all other modes of applying heat to the surface of the body.

Experiments with the hot water and the vapor baths have not been productive of good results.

ICE.

For the relief of vomiting, ice is decidedly useful. Small pieces allowed to dissolve upon the tongue

will often check the nausea, and at the same time allay the thirst, thus removing one great cause of distress.

Ice may also be employed to advantage where there is evident congestion of the brain—a frequent attendant on cholera, or more properly, perhaps, a subsequent disease. In the spasms of cholera, ice applied to the parts affected will afford relief.

EMETICS.

Emetics are dangerous in every stage of the disease. They have been used and are recommended by a few practitioners in the incubation or forming stage of the disease, but experience admonishes us of their danger. The alarming irritability of the stomach and the fearful prostration of the vital powers forbid their use.

There may be conditions during the progress of recovery when emetics would prove salutary. Sometimes, when the system begins to react, when the calomel has changed the character of the secretions, great distress arises from the accumulations of large quantities of dark bile in the stomach. This may be relieved by an emetic, repeated at intervals; but it will be safer to leave the treatment, in this case, to the judgment of a physician. The inappropriate use of an emetic may be the cause of much mischief, perhaps death.

PURGATIVES.

When the cholera has been subdued, and the system is returning to its healthy condition, a mild purgative is indicated. For this purpose, none answer

so good a purpose as castor-oil. It is less irritating in its effect, and in many cases appears to exert a specific action on the liver. Other cathartics, purgatives, and laxatives have been recommended, but, unless by the advice of a physician, should not be used. Many of them irritate the bowels and are generally injurious. They are only admissible after a considerable change has taken place in the system through the action of other agents.

Calomel is an exception to the use of cathartics in cholera, because its action is specific, producing a change in the symptoms of the disease, while its after effect, as a cathartic, is, no doubt, beneficial.

INJECTIONS.

Injections are employed with benefit under certain circumstances. In this way alcoholic stimulants may be administered with advantage, and without incurring the risk of disturbing the brain.

If there is but little vomiting, an injection containing laudanum is better to check an existing diarrhea than to introduce large quantities of opium into the stomach.

Injections of warm water will relieve the uneasy sensation, caused by the acrid bile in the lower bowels, during the recovery from an attack of cholera.

Injections of hot water have been made use of, during the cold stage of the disease, to restore warmth to the system, but without beneficial results.

CUPPING AND LEECHING.

This method of abstracting blood is useful when there is danger of congestion, a determination of blood to the head, or for the relief of distress in the stomach or abdomen. Like general blood-letting, it is sometimes indispensable, but the necessity for its application is only to be determined by a competent medical adviser.

TRANSFUSION.

In consideration of the almost complete drainage of the blood-vessels, of serum, or the watery portion of the blood, thereby reducing the vital powers, it early occurred to the minds of medical men that the blood of a person in health injected into the veins might unite with the thick blood left in the heart and main arteries, and thus give new life and vigor to the system, and bring the sufferer back to his natural condition.

Transfusion was resorted to; but, while the experiment failed in every instance to realize the hopes which had been entertained, the phenomena resulting were of the most remarkable character.

Another theory originated, and was tested with the same result. It was thought that the grand requisite was to supply the place made vacant in the arterial channels with a solution containing the same chemical affinities that existed in the lost blood when in a healthy state. A solution of certain salts and their proportions, ascertained by analysis, was made use of. The result still led to disappointment.

Various solutions were injected into the veins, hoping to find some corrective for the diseased blood left in the system; but in vain.

The immediate effect of transfusion upon the subject is so wonderful, and yet such a positive failure, that the report of a few cases can not fail to be read with interest.

Dr. Diffenbauch, of Berlin, Prussia, in a pamphlet published in 1832, referring to transfusion of human blood taken from a young and healthy person, says: "I made the injection by laying bare a vein under the skin in the arm, into which I introduced a small tube. The blood used was drawn into a warm cup, and the blood drawn into a syringe was thrown slowly into the vein. The injection was made at intervals, and so as to throw in, in from five to seven minutes, at several times, an ounce at a time. The operation was attended by the following phenomena: In the first instant the patient was only sensible of the swelling out of the veins, by which the blood was carried to the heart; then came alteration of the pupils, sprightliness of the eyes, heavy perspiration; then return of pulsation and warmth of the cheeks that were previously cold. The hands and feet remained cold. Death succeeded the operation in half an hour."

Other agents, which were supposed to have the property of restoring the fluidity and floridness of blood were tried. The following case was reported by Dr. Carrere, of Baltimore, in 1832. The injection was a solution of nitrate of potash in warm water. He says: "We succeeded in passing about an ounce

of the fluid into the vein. As it passed in, the patient cried out with an agony of pain. He continued to cry out at each injection. He said he had a rending pain in his shoulder, and complained of its passing inward toward the heart, when all at once he started up, as if suddenly alarmed. His face became flushed; the surface, which all day had been extremely cold, became warm; his pulse stronger, and his expression animated. He proceeded, clearly and with considerable energy, to inform us that he had suffered all day from cold feet, whereas he now was warm, and felt a pleasant glow over his whole body; and that we had infused new life and animation into his system, for which he wished to give us a thousand thanks. A few hours of seeming respite terminated in a return of collapse, and death closed the scene."

During the same year, at the Crosby Street Hospital, New York, Dr. Depeyre operated upon a very robust subject, with a like result. He says: "The patient was suffering all the array of symptoms that distinguish the collapsed cholera. The solution injected stood at a temperature of 114 degrees. A thermometer introduced into the patient's mouth marked 93 degrees. All the evidences of improvement immediately ensued; circulation re-established; temperature of the body augmented; the surface covered with a warm perspiration; the flush and vigor of health restored. The man exclaimed that his cure was complete, and laughed aloud from ecstasy of relief. He was a corpse an hour after."

Transfusion has been found wanting, and the an-

ticipations of medical men, who were for a time sanguine of the most beneficial results, have been disappointed. Little or nothing is to be expected from the practice, which, from its uniform failure, has been very nearly abandoned. One of the most experienced physicians of New York says the recoveries have not been more than two in fifty. Still, success may yet result from this mode of treatment.

A MULTITUDE OF REMEDIES.

From such a variety of opinions as exist in regard to the cause of cholera, there has resulted a great diversity in the methods of treatment, and the very general want of success which has attended the most of them has given origin to all manner of nostrums and specifics.

Electricity has been tried and abandoned. Patients have been tortured with burning alcohol and hot vapor baths. Quinine and other powerful tonics have had a trial, with unsatisfactory results. Charcoal was at one time highly lauded, but has been laid aside.

Innumerable mixtures and compounds, concocted by charlatans, have been urged upon the public as "infallible remedies." These are usually conglomerations of stimulants, astringents, and opiates, recomended, without regard to the symptoms or stage of the disease, by quacks, nostrum venders, and mountebanks. All such concoctions should be avoided.

"From powerful causes spring the empiric's gains—
Man's love of life, his weakness and his pains;

These first induce him the vile trash to try,
Then lend his name, that other men may buy.
No class escapes them—from the poor man's pay
The nostrum takes no trifling part away;
Time, too, with cash is wasted; 't is the fate
Of the real helpers to be called too late.
They find the sick when, time and patience gone,
Death with a tenfold terror hurries on."

PART VII.

TREATMENT.

WHAT SHOULD BE DONE.

I DESIRE, first of all, to impress upon the minds of my readers this most important of all facts, in connection with the treatment of cholera. Whatever the remedy or mode of treatment, in order that it may be successful, it must be applied at the very earliest possible moment.

Taken in its incipient stages, cholera may be subdued, and the patient may be rescued from impending death. A few hours lost places him beyond the reach of help. Regrets will be unavailing; the physician's skill can not save the hapless victim.

True it is, indeed, that we sometimes see wonderful recoveries from even a hopeless condition of collapse. But these cases are so very rare that they afford no encouragement to delay the requisite treatment. The remedy must be appropriate and promptly applied.

The chances of benefit to be derived from medicine are always less in proportion to the length of time that has elapsed from the commencement of the attack.

PREMONITORY SYMPTOMS.

Too much importance can not be attached to the premonitory symptoms, on which are suspended the life of the patient, and which will determine his fate, as they may be promptly attended to or disregarded.

Sometimes these premonitory symptoms are of very short duration, and death may ensue a few hours after the attack. What you do must be done quickly.

Cholera is a disease so diversified in its phases, so erratic in its general character, that it must be treated in its individuality. The symptoms vary with the different constitutions and peculiar habits of the individual.

The different stages of the malady are so dissimilar that no disease requires more care and skill.

LOOSENESS OF THE BOWELS.

Whenever the cholera exists in a community, or there is reason to anticipate its approach, then the most important consideration will be not to neglect, for even one hour, any degree of looseness of the bowels. This admonition is the more necessary because this symptom of an approaching attack of cholera is usually unaccompanied by pain, and consequently is very liable to be disregarded as a matter of little consequence. Remember, the neglect to heed this premonitory warning has cost thousands of lives.

This symptom is present in almost every case. The opinion that cholera sometimes sets in without it, I am inclined to think, is a mistake, originating from the fact that it is painless, and consequently unnoticed. It may be regarded as all but a universal symptom, and life depends on giving it immediate attention. Even in cases in which death takes place with the greatest rapidity, the suddenness is apparent, not real. The fatal collapse is the final but gradual and sure result of a neglected diarrhea. Again, then, I say, life will depend on the promptness with which you attend to the painless and apparently trifling looseness of the bowels.

It will be indispensable, in such cases, to discontinue solid food, and limit the quantity of farinaceous food. Partake of fluids in moderation. Abstinence, in this respect, will do much toward restoring the stomach to a healthy condition.

If the subject be of temperate habits, and is prudent in regard to the use of food, the diarrhea is generally moderate, and may continue for two or three days without producing much distress or prostration, but is very likely suddenly to terminate in collapse.

REMEDIES.

SLIGHT DIARRHEA.

When the diarrhea is caused by indigestible food, and the evacuations are not particularly thin or frequent, and without vomiting, a dose of castor-oil will be sufficient, in the most of cases, to carry off

the indigestible matter and restore the bowels to a natural condition.

If the looseness of the bowels continues, the following may be used:

No. 1.

Take of Powdered rhubard and carbonate of magnesia, each..... 20 grains.
Compound tincture rhubarb..... 1 drachm.
Peppermint water..... 1 ounce.
Mix.—To be taken at one draught.

For a still continued looseness of the bowels, denoting considerable intestinal irritation, the same dose may be repeated, with the addition of 20 drops of laudanum.

OBSTINATE DIARRHEA.

If the diarrhea does not abate under the treatment already advised, more positive remedies should be resorted to without delay.

In a choleric atmosphere, where a general disposition to looseness of the bowels prevails, and ordinary remedies for the diarrhea appear to be almost powerless, I have found the greatest benefit from the use of an astringent powder, modified to meet the conditions of the case. I have used it in all stages of the intestinal disease, from simple looseness of the bowels to the most profuse and frequent discharges, if unattended by spasms, with the most gratifying results. When decided symptoms of cholera have set in, its use should be discontinued.

The following is an excellent form for general use, and is applicable to diarrhea in every stage:

No. 2.

Take of Catechu and kino, each..... 1 drachm.
Pulverize thoroughly, and add
Tanic acid..... 30 grains.
Powdered opium..... 5 grains.
Rub together very carefully and divide into ten powders.

The efficiency of this prescription depends materially on the thorough trituration and mixture of the ingredients.

If for a simple diarrhea, one-half of one powder may be taken in a little syrup. If the diarrhea continues, repeat the same quantity after each evacuation, or increase the dose.

Having completely checked the looseness of the bowels, after the lapse of a few hours, or on going to bed, take as follows:

No. 3.

Take of Blue pill..... 10 grains.
Opium..... 1 grain.
Mix, and divide into two pills.

If the diarrhea is peculiarly stubborn, and especially if the patient is addicted to the free use of alcoholic stimulants, it will be found necessary to take the entire powder No. 2 at one dose, repeating it after each stool.

RICE-WATER EVACUATIONS.

If the rice-water discharges have commenced, this is a sure indication of malignant cholera. The disease has commenced its attack, and mild measures will no longer prevail. Give immediately the following:

No. 4.

Take of Calomel ..... 10 grains.
Nitrate of potash..... 10 grains.
One powder.

To be repeated every half hour, till the evacuations are of a decidedly bilious character. The nitrate of potash will keep up a flow of the urine, or, if already arrested, which is most probable at this stage of the disease, will restore it.

Calomel is one of the most reliable remedies we have in the collapsed stage of the cholera. Its good effects, however, are in a great degree lost if administered while profuse evacuations from the bowels and ejections from the stomach are going on. The remedial agent is expelled before it can produce its characteristic action upon the functions. This was the result of my experience in the first cases I treated with calomel. Where the discharges were moderate, and the calomel was retained, the effect was most decidedly beneficial. Where the vomiting is excessive, chloroform has been found invaluable, relieving the spasms and allaying the irritability of the stomach. It should be administered as follows:

No. 5.

Take of Chloroform ..... 1 drachm.
Oil of turpentine ..... 1 ounce.
Water ..... 3 drachms.
Mix.

Give a tea-spoonful of this mixture in a little weak brandy and water; spearmint water may be drank to relieve the thirst. In half an hour the dose

may be repeated, followed shortly after by the powder No. 4. The chloroform mixture will arrest the excessive drainage, enable the stomach to retain the remedy until its desired alterative effects are produced on the organs, and the secretions again flow in their natural channels. Then we are delighted with the almost simultaneous development of the reanimated functions. A change is seen in the entire system. The pulse beats, warmth returns to the extremities, the features expand, the hue of death passes into the flush of life, and we know that the grim tyrant has released his hold on the victim.

NAUSEA AND VOMITING.

This distressing symptom is seldom absent long after the commencement of the diarrhea. It may frequently be alleviated by draughts of spearmint tea, or spirits of camphor in a small quantity of water.

If the sickness at the stomach and vomiting is an early symptom, and it is clearly evident that it arises from eating improper food, or in consequence of overloading the stomach with that which of itself might, in moderate quantities, be harmless, and if it is clear that the food has not passed from the stomach into the intestines, this is the time for an emetic. The organs of digestion are thus relieved, and the predisposition to disease at once subdued. For this purpose use

No. 6.

Pulv. Ipecacuanha.....20 grains.
Calomel..... 5 grains.

Let this be taken in about half a wine-glass of

water. If it be taken in a large quantity of water, vomiting will commence too rapidly, and the contents of the upper portion of the stomach only will be emptied. For the same reason, draughts of tea or warm water should not be taken until retching comes on. It may then be drank moderately to promote the vomiting. The calomel is used as a cathartic, and will serve to carry off any portion of the undigested food that may have passed into the intestines.

The patient should be restricted to broth or gruel till the symptoms have been absent for a day or two.

Do not be in haste to resume the use of solid food.

In advising the use of an emetic, I desire to be distinctly understood as to the time when it should be employed. If it is not taken before the contents of the stomach have been ejected, or have passed into the bowels, it should not be taken at all. Except for the purpose of evacuating the stomach of its unwholesome contents, no benefit can arise from it, and at a later period it will be almost sure to do harm. The very few exceptions to this restriction can only be known and acted on by the advice of a thoroughly competent physician.

If the discharges from the bowels are now only moderate, and are not characterized by the thin rice-water appearance, use this mixture:

No. 7.

Take of Carbonate of soda..... 1 drachm.
Oil of sassafras..... 5 drops.
Laudanum.....60 drops.
Water..... 6 ounces.
Mix.

Take one table-spoonful every half hour or hour, till distress, sickness of the stomach, and inclination to vomit are entirely subdued.

SUDDEN ATTACK OF DIARRHEA AND VOMITING.

If the attack of diarrhea and vomiting commence abruptly and at the same time, or very nearly so, and if the evacuations resemble or approach in appearance rice-water, it is a dangerous case. The disease has been working insidiously and stealthily into the system, but has not been made apparent by any unusual disturbance of the functions till this sudden outbreak. The tongue will probably be clean, and the only indication of the terrible malady will be the unusual commotion in the stomach and bowels. If the pulse be full and strong, take one of the mixture No. 5. Should it be thrown from the stomach, repeat the dose in a few minutes, with a very little weak brandy and water, or mint tea, and, without delay, administer as follows:

No. 8.

Take of Calomel.....20 grains;
Powdered opium..... 1 grain.
Mix and divide into 2 powders.

One to be taken immediately, and repeat it in one hour. Drink of brandy and water, or spearmint tea. Green mint is best, if it can be had.

After the alarming symptoms have subsided, use the mixture No. 7, one table-spoonful every hour, or half hour, as the case may require. If there is retention of the urine, give No. 4, as directed. A mustard plaster, large enough to cover the region

of the stomach and liver, should be applied. As the disease subsides, the evacuations will become very dark. Convalescence will be slow, and extreme caution must be exercised in regard to diet. Remember, no solid food must be taken into the stomach until several days have elapsed after recovery is supposed to be complete, and then it must be partaken of in great moderation.

Mr. Branon, aged fifty-eight, a tall, muscular, and powerful man, journeying westward in August, 1850, with his wife and two daughters, while stopping temporarily at the Monroe House, St. Louis, was suddenly attacked with violent purging, vomiting, and spasms. When I saw him his pulse was small and quick, discharges like rice-water, extremities cold. I directed mixture similar to No. 5, followed, in half an hour, by calomel 10 grains, and pulverized opium 1 grain; repeated twice. Mustard plasters were applied to the stomach and extremities. Bowels opened with bilious evacuations. Recovered rapidly, and on the fourth day expressed himself as well as ever in his life. The next day he was to have taken passage with his family on a boat bound for St. Paul. Up to this time, he had been restricted in his food to broth, gruel, or soup. No longer feeling the necessity for such restraint, he partook of a little mutton with bread, butter, apple-sauce, though very sparingly. This was at about 2 o'clock P. M. At half-past 4 he was in a state of relapse, and died during the night.

Such instances were not uncommon, and must serve to impress the patient with the great necessity

for particular prudence in regard to partaking of solid food for a considerable period of time after convalescence.

DISTRESS AT THE STOMACH WITHOUT PURGING.

It happens occasionally, during the cholera period, that patients complain of *distress at the stomach*, probably with headache and impaired appetite, but no diarrhea. The tongue will be coated. This will be the first symptom, and should not be neglected. Ten grains of calomel, or a dose of castor-oil, with a blister over the stomach, will usually be sufficient in such cases.

SPASMS.

Spasms may occur at any stage of the disease. Sometimes, though rarely, they present the first indication of the malady. Spasms, however, usually occur in combination with the other symptoms. Stimulating embrocations and friction to the parts affected are the means generally resorted to for relief. I have found ice applied to the parts affected productive of beneficial results. Ice is admissible in any stage of the disease. The chloroform mixture, No. 5, should be resorted to.

DELIRIUM.

This rarely occurs. Occasionally, however, there is an obstinate determination of blood to the head, with inflammation of the brain. The case requires immediate attention. Call in the aid of a physician without delay; in the mean time applications of ice should be made to the head, and I have known ice,

broken fine and rolled up in a cloth, placed along the spine, to afford prompt relief.

If the symptoms of congestion are not relieved at once, the patient passes through the different stages of purging, vomiting, collapse, delirium, and death.

COLD SURFACE AND EXTREMITIES.

When we see the cold, shriveled skin of the cholera patient covered with beads of clammy sweat, our first and natural impulse is to apply heat, in every possible shape, externally. Experience, however, has shown that many of these applications are useless—indeed they are worse than useless, for they only serve to torture the already suffering patient, who is unusually sensitive to the pain occasioned by heat, although the effect even of boiling water is not apparent to the observation. Dry friction is almost entirely useless, except when directly applied to the muscles contracted with spasms. In this way great relief may be obtained.

COLD PERSPIRATION.

The very best application for a cold surface and cold perspiration I found to be as follows:

No. 9.

Take of Lard..... 1 pound.
Red pepper..... 2 ounces.
Mix.

Simmer well together, and apply while quite hot, with a piece of flannel, to the entire surface, rubbing briskly until warmth is restored to the body.

The above preparation, kept warm and faithfully applied, will do more toward restoring a natural

glow to the body and checking the cold perspiration than any external stimulant of which I have any knowledge.

Olive oil, saturated with camphor and red pepper, may be used with great advantage. Cajeput oil is also highly recommended. I have never tried the latter, but believe it would be beneficial.

Stimulating ointments were used quite extensively in the hospitals and in private practice during the two visitations of cholera with which we have been afflicted. In another place will be found the method of preparing these ointments. Their use would no doubt prove salutary; but I am confident that the simple preparation of lard and pepper, as advised, will answer as good if not a better purpose in all cases.

CONVALESCENCE.

Recovery will always be slow, and its progress must be carefully watched. It will be constantly necessary to act with reference to any possible local disturbance of the system that may occur, particularly as to the development of inflammatory symptoms. The brain, the liver, the bowels, the stomach, are, each and all, liable to be attacked. The symptoms very much resemble those of typhus fever. Very little need be done through the agency of internal remedies while the febrile symptoms are mild and no particular organ is involved. If, however, there is high fever, the pulse becomes full and hard, the skin dry and hot, the tongue dry and coated, the face flushed—in the absence of a physician—procure the following:

No. 10.

Take of	Tartar emetic	2 grains.
	Spearmint water	4 drachms.
	Water	1½ ounces.

Mix.

Take two tea-spoonfuls every hour, till the alarming symptoms abate. In all cases where, during convalescence, there are indications of inflammation of the brain, liver or other organs, administer No. 10, as directed. Be very careful in having the prescription put up, and be very precise as to the exact quantity and the stated interval of time directed.

Ice is a useful application to the head in cases of inflammation of the brain, and where the liver or stomach becomes the seat of the disease, apply mustard plaster over the affected part. The patient must be restricted to a very rigid diet, and on the abatement of the more aggravated symptoms, must observe the most temperate and regular habits. Thus, by careful nursing and watching, the convalescence of the patient may be conducted to a favorable termination.

REMARKS.

It has been already shown that the prelude to cholera is a disarrangement of the intestinal functions, manifested by a "looseness of the bowels" and diarrhea, and that the proper course to be pursued is to arrest the incubating tendency in its incipiency. The remedies I have suggested for this purpose, if properly and promptly administered, will be sufficient to accomplish this result in almost every instance.

Medicines, especially for the "diarrhea and cholera," of every namable and unnamable description that quackery and empiricism can devise, will be urged upon you during the prevalence of the cholera. "Touch not, taste not, handle not."

If the diarrhea is checked by the simple means I have advised, the stomach and intestines will be left in a healthy condition, and the predisposition to disease will be lessened; while, if the looseness of the bowels is stayed for a time by the vile compounds of patent medicine peddlers, you will be sure to suffer all the pains and penalties attached to the introduction of irritating drugs into the stomach; so that, should you be stricken down with cholera, the mucous membrane being in an irritable condition, in consequence of the ill-directed nostrums swallowed, the functions will break down at once, and you are beyond all antidote.

"Out! you impostors!
Quack-salving, cheating mountebanks!—your skill
Is to make sound men sick, and sick men kill."

Diarrhea is constantly confounded with the discharges from the bowels incidental to the true or collapsed stage of the cholera. None, however, need err in this respect; the commencement of the malignant disease is easily distinguished by the most common observer, if the description of the symptoms is carefully noted.

It is essential that this distinction should be understood, because the remedies that will effect a cure of the antecedent affection of the bowels will, in this stage, prove altogether inefficient. The mistake

as to the distinction to be observed between the treatment of "premonitory diarrhea" and the true stage of cholera, has led to much misjudged abuse of calomel. Those who condemn its use assert that "other remedies are more efficient and less injurious." They have confounded diarrhea with cholera, and have succeeded in curing the premonitory disease. Cholera-morbus, too, is sometimes mistaken for collapsed cholera, and the patient having been restored to a state of health by the use of opiates, stimulants, emetics, carminatives, etc., it is proclaimed as a cure of cholera, and cited as evidence that this malignant disease may be successfully treated without the use of calomel.

Let these medical wise-sayers administer their vaunted remedies in a case of real "asphyxiated cholera," and their fallacy will be made fearfully apparent. The reckless and indiscriminate use of calomel is certainly to be condemned; not more so, however, than the meaningless and injudicious use of any other remedy, whether mineral or vegetable, arsenic or belladonna. Were only "mild and innoxious drugs" made use of in practice, the reformer's (?) materia medica would be reduced to a very insignificant catalogue. I do not intend to discuss this subject, however. Such a course would be entirely foreign to the object of this book.

My first experience in the use of calomel, as I stated in the introductory chapter, was unfavorable. Subsequent observation confirmed an idea that originated in my mind that its salutary effects were counteracted by the opium with which it had been

combined, and which tended directly to paralyze those functions already in a sluggish and torpid condition, and which it was indispensably requisite to restore to a new and healthy action. For the accomplishment of this result, calomel was unquestionably the most appropriate agent; but as its retention upon the stomach had been secured by the use of opium, the very object for which it was administered was thereby defeated, and the action of those functions was checked by the opiate which the calomel was intended to restore. Calomel allays the irritability of the mucous membrane, and, what is of the most vital importance, quicker than any other remedy, induces that change of action which is necessary to the re-establishment of health. It is almost specific in its mode of action, and its cathartic effects are beneficial, if not essential, to the change it exerts. As I have already said in reference to its use, sometimes the evacuations and ejections are so continuous, and in such enormous quantity, that the medicine is carried from the system before it can produce its specific action. In this case, give the mixture No. 5, repeating the dose every hour or half hour, till the discharges cease. Calomel is then indicated, as directed in prescription No. 4.

Cases occur where, from some unusual exciting cause, the patient is stricken down at once with the most violent symptoms, congestion of the brain, with spasms, and suffering the most intense agony. A physician should be procured immediately. In the absence of medical aid, apply ice to the head, and administer, as directed, No. 10. Where mustard

plasters are used, the ground mustard should be made into a thin paste, and applied directly to the skin over the region of the stomach. Renew them as often as they cease to produce a burning sensation. Ice, in small pieces, may be used to allay the thirst.

If the patient has been much accustomed to the use of stimulating drinks, brandy and water may be given to allay nausea and vomiting. Brandy, combined with strong coffee, in small quantities, has sometimes been used for the same purpose, with good effect. When calomel has accomplished its desired result in changing the secretions, castor-oil answers a better purpose as a cathartic than any other agent. It not only moves the bowels gently, but appears to exert a direct action on the liver. If castor-oil is objectionable on account of its disagreeable taste, the next best cathartic is tartrate of potash. Take one drachm, in a little warm chicken-broth, every two hours, until it operates freely.

For spasms, spirits of camphor, or camphorated oil, may be rubbed on the parts, with salutary results. Internally, camphor used in any considerable quantity is liable to produce a determination of blood to the brain. In small doses it answers very well for sickness at the stomach, but is not as good as spearmint or peppermint tea in small quantities.

Injections are rarely resorted to. Sometimes, where diarrhea exists without vomiting, laudanum has been administered in this way advantageously, and alcoholic stimulants are better administered by this mode than by the mouth. By those who have made use of this method, it is said to impart heat and vitality

to the intestines, without disturbing the functions of the stomach or brain.

As an internal stimulant, aqua ammonia may be used with advantage, diluted with an equal quantity of water, one table-spoonful at a dose, repeated as occasion may require.

I have already alluded to the use of lard and other oleaginous preparations externally, for the purpose of checking the profuse secretions through the pores of the skin, and restoring warmth to the body. Several stimulating ointments were made use of for this purpose during the epidemics of 1832 and 1850. Their use is said to have been attended with beneficial results.

No. 11.

DR. ROE'S OINTMENT.

Take of strong mercurial ointment..... 6 ounces.
Cayenne pepper and camphor, each..... 3 ounces.

Thoroughly blend together the ingredients, and rub the entire surface of the body with a brush.

This prescription was used in New York hospitals, and was pronounced an excellent aid in co-operation with internal remedies; while checking the cold sweat, producing salutary constitutional changes in the functions.

No. 12.

DR. RHINELANDER'S OINTMENT.

Take of simple ointment..... 6 ounces.
Melt and add
Cayenne pepper..... 3 ounces.
Camphor..... 3 ounces.
Muriatic acid..... 4 drachms.

Stir the mixture well together, till cool.

Apply freely to the whole surface.

No doubt these ointments may be beneficial. My impression, however, is that the simple melted lard will be found quite as effective in all cases.

ACETATE OF LEAD.

I have seen cases of cholera of the milder form conducted to a favorable termination by the use of the acetate of lead. I found this agent particularly effective when the epidemic appeared to be dying out, and had evidently assumed a less malignant type. It may be used as follows:

No. 13.

Take of Acetate of lead.....18 grains.
Opium..... 1 grain.
Make into 12 pills.

One pill to be taken every half hour, till the discharges from the bowels begin to diminish; after that, at longer intervals, as the symptoms may appear to indicate.

DR. WARNER'S TREATMENT.

Another method of treatment has met with some favor among those who reject calomel. It was originally adopted by Dr. Warner, in his hospital practice in Baltimore, in 1832, as he claimed, with decided success.

In case of an attack commence with

No. 14.

Take of Tincture of asafœtida..... 3 drachms.

Follow this with 1-drachm doses every half hour.

During the interval between the first and second dose of asafœtida use as follows:

No. 15.

Take of Pulverized rhubarb.....10 grains.
Nitrate of potash..... 5 grains.
Pulv. squill..... ½ grain.
Sulphate of quinine..... 3 grains.
For one powder.

To be taken in a little weak brandy and water, and to be repeated every hour. Brandy and water, in small quantities, may be occasionally swallowed, whatever internal method of treatment may be adopted. Apply mustard plasters to the stomach and abdomen, and make free use of hot lard ointment on the surface, as already directed.

The two methods here given for the treatment of cholera without the use of calomel have found earnest and sincere advocates. No doubt good results have been derived from each.

My judgment is decidedly in favor of calomel. I am confident, when the system comes under its characteristic influence, and is sustained by the proper auxiliary aids, as I have heretofore suggested, it will bring the disease to a favorable issue.

If the patient entertains a prejudice against the use of calomel, unless he is more regardful of his preconceived opinions than he is of his life, he will do well to adopt this agent.

BE PREPARED:

"For when men think they most in safety stand,
Their greatest peril, often, is at hand."

During the invasion of the epidemic cholera,

every family and every individual not in a position to obtain immediate aid, should be provided with the necessary medicines to be used in case of an attack.

Have on hand—Castor-oil, pulverized rhubarb, paregoric (useful for children's diarrhea), laudanum, ground mustard, red pepper, lard, spearmint or peppermint (as fresh as possible), spirits of camphor.

The prescriptions necessary to have on hand are as follows. Be careful to copy correctly. They can be obtained at any drug store. Have the package numbered to correspond with the number in this book, and have the ingredients written out in full upon the wrapper or envelope containing each. In this way you will avoid mistakes:

No. 1 can be obtained at any drug store when wanted.

No. 2.—This is the most important of all the remedies in the catalogue, because it is always a safe and sure remedy for looseness of the bowels, diarrhea, all relaxed conditions of the bowels, the dose, and the intervals of time for its exhibition, being graduated according to the character and severity of the disease. The suggestions already made will be a sufficient guide for this purpose. No person traveling should be without a package of these "astringent powders." It can be carried in the vest pocket or portmonnaie, and in case of an attack of diarrhea a small quantity can be taken without inconvenience, and will prove a sovereign remedy. Many an invasion of cholera has been and may be thus repelled.

No. 3.—It will be well to have a few of these pills prepared and ready for use in the house.

No. 4 may be kept on hand, or it can be obtained when required, if you have a druggist near by.

No. 5.—To be mixed as required.

No. 6.—If not provided with this emetic, or it is not convenient to procure it, use salt and warm water. The powder is much the best, however.

No. 7.—Procure whenever wanted. It is a most excellent adjunct to other remedies, and it will be well to have the carbonate of soda and oil of sassafras in the house, so that the mixture may be prepared when needed; (six ounces will be about two-thirds of a common tumbler full).

No. 8 should be kept on hand, as the occasion in which it may be required admits of little delay. Unless a druggist lives near by, it should be prepared ready for use.

No. 9.—Prepare ready for use.

No. 10 can only be compounded when wanted.

No. 11, No. 12, No. 13, No. 14 and No. 15 can be prepared at any drug store by those who wish to make use of them.

The following is an excellent mixture to have in the house or workshop. It is to be used in cases of any unusual disturbance of the stomach and bowels, or where there are cramps:

No. 16.

Take of	Laudanum	3 drachms.
	Spirits of turpentine	3 drachms.
	Oil of peppermint	30 drops.

Mix.

From a tea-spoonful to a table-spoonful to be taken, with a little weak brandy and water, every hour, till relieved.

HOW TO TAKE CASTOR-OIL.

Take half a cup of water, half a tea-spoonful of essence of peppermint; sweeten with sugar; pour into this the oil; it will float upon the water, and the whole may be swallowed at a draught, the water preventing it from adhering to the mouth, and the peppermint completely disguising the taste of the oil. The dose of castor-oil is from one to two table-spoonfuls for an adult.

MEASURES.

A common tea-spoon contains about one drachm.

A common dessert-spoon contains about three drachms.

A common table-spoon contains about five drachms.

A common wine-glass contains about two ounces.

Where precision is required, a graduated glass, which will indicate from five drops to one or two ounces, should be used. Such a measure can be purchased for a trifle at the drug store, and will always be convenient and safe for the administration of medicines in a family.

THE DOSES OF MEDICINES FOR CHILDREN.

It is very difficult to give any precise rule for the doses to be administered to children in cases of cholera. The general rule observed will hold good in these remedies, and can be followed very nearly.

For a child	under	1	year	the dose should be	1-12th	of that of an	adult.
"	"	2	"	"	1-8th	"	"
"	"	3	"	"	1-6th	"	"
"	"	4	"	"	1-4th	"	"
"	"	7	"	"	1-3d	"	"
"	"	14	"	"	1-half	"	"

The dose of calomel or castor-oil for a child is larger in proportion, and laudanum less, than for an adult.

Women require smaller doses than men.

One of the most important circumstances to be considered in this connection is, that persons habituated to the use of alcoholic stimulants, malt liquors, and tobacco require much larger doses to affect them in cholera. This should be remembered. Other influences may affect the system and modify, in some degree, the action of medicines; but the rules given are sufficiently precise to enable the reader to use and administer the remedies I have advised in almost any case of cholera.

DIET.

I have repeatedly, during the course of this treatise, alluded to the great necessity for caution in the use of solid food. Very little nourishment will be required until convalescence sets in; then, as a rule, the severer the attack has been the greater the necessity for diluted and light food.

In the earlier stages of convalescence, the food should be of a farinaceous description. Animal broths should not be indulged in. I have seen much mischief result therefrom. Barley-water and toast-

water will be grateful to the taste and afford nourishment. I have had reason to suppose that corn-meal gruel was injurious. I would not recommend it. Farina, tapioca, sago, and rice constitute the basis of excellent articles of diet; but they must be well cooked, of thin consistency, and but little seasoned. Not one particle of food should pass into the stomach in a solid state.

Gradually, after the third or fourth day, a change of diet may be allowed. Chicken broth, mutton broth, and other liquid animal food, should be resorted to; but, with these exceptions, it will be well to confine the diet to the mucilaginous or farinaceous compounds for some time to come, and eat of those only in moderate quantity.

When convalescence is complete, a more generous diet is admissible; but solid food should be eaten only sparingly. Fish should not be indulged in.

That the convalescent may be duly impressed with the vital importance of giving heed to the admonitions I have uttered in regard to diet, I extract from a valuable work on epidemic cholera the remarks of the author, Dr. Jameson: "One of the greatest difficulties attending cholera was to get our patients in a condition to bear food. The digestive functions were much weakened, and it was with extreme difficulty patients could resume the use of the mildest articles of food. We had often seen injury arising from the use of food in bilious and other fevers, but never did we see any thing bearing any comparison with this circumstance as it stood related to cholera. In both hospitals patients injured themselves in that

way, in spite of all precautions, and many died from their imprudence. In many instances, nothing but gruel, sago, toast-water, common tea, or other drinks, equally mild, could be borne for upward of a week, and in private practice we found the same difficulty in getting our patients to resume their accustomed food, owing to the liability to a relapse."

I have given such directions for the treatment of cholera as will enable any person of ordinary intelligence to meet an attack of the terrible malady with a reasonable chance of successfully resisting its dreaded termination. To secure this hoped-for result have the medicines in your possession, and administer them, according to directions, with as little delay as possible.

PART VIII.

MEASURES FOR PREVENTION.

"An ounce of prevention is better than a pound of cure."

It is urged, by some, that the varieties of food and the moderate use of stimulants, to which we are accustomed in a state of health and in ordinary conditions of the atmosphere, will be harmless during an epidemic, and should be partaken of then as at any other time, being careful to abstain from excess or over-indulgence.

This reasoning is plausible, and generally finds encouragement in the sentiment of the community, which will be in favor of a moderate indulgence in fruits and the luxuries of the table, as well as in the use of wines and liquors. Inclination is a powerful persuader.

An eruption of cholera, however, very quickly proves the fallacy of this theory, and the experience of those who have passed through the epidemic period has been very conclusive against many articles of food and drink, which have usually been partaken of without restraint.

The epicure finds his accustomed delicacies ejected from his stomach undigested. The veteran wine-

drinker is astonished to wake up in the morning, after an evening's indulgence, with his bowels in a fearful state of commotion. The argument is perfectly convincing. The presence of a pernicious atmospheric influence is readily acknowledged. The gentle reminder is quite sufficient to put him on his guard for the future.

An unusual influence is unhesitatingly admitted, and the opinion soon becomes general that personal safety requires an abstinence from articles of food heretofore considered wholesome. Every one feels a conviction that moderation and temperance, in eating and drinking, are essential to his protection.

The atmospheric influence is manifested by remarkable irritability of the stomach and bowels. Very few admit this fact, however, till they make the experiment, and if they are admonished thereby, they will be very likely to pass through the ordeal in safety.

The debauchee, the intemperate drinker, the jolly good fellow, accustomed to late suppers and the flowing bowl, will materially lessen the chances of falling a victim to the scourge if he will abstain from his convivial habits and observe a moderate, well-regulated system of eating, drinking, and sleeping.

Persons of constipated habits should never attempt to open their bowels by the use of any article of food. It should be done by mild cathartic medicines. Castor-oil is the best. Never use any of the saline purgatives for this purpose. Epsom salts, citrate of magnesia, cream of tartar, Rochelle

salts and seidlitz powders are dangerous, because, although they do not act harshly, they produce watery evacuations, and have a tendency to reduce the temperature of the system, both of which results are to be avoided.

Whenever a purgative is required, use a moderate dose of castor-oil, or some one of the mild aromatic laxatives. Do not take a purgative medicine over night.

If the action of a purgative is too free, it should be checked with a few drops of laudanum.

In the rules laid down for the prevention of cholera, a distinction should be made between a place where the disease already exists and a place where it has not yet made its appearance.

Where the epidemic exists, the restrictions in regard to eating fruit and vegetables should be carefully attended to.

Where the epidemic does not prevail, a prudent use of fruit and vegetables can do no harm.

INTEMPERANCE.

"Fatal effects of luxury and ease,
We drink our poison and we eat disease."

The evils to be dreaded from intemperance can not be too strongly impressed upon the minds of those who have unfortunately been addicted to this vice. Intemperance at any time is sure to entail a list of "aches, pains, and diseases dire" upon its victims, which must eventually cut short the sum of existence; but, with an epidemic prevailing, it is

dangerous in the extreme. Besides predisposing to the attack, it renders the subject, when stricken with the disease, unimpressible to all remedies. As an evidence of the fatal results of intemperance, the statistics of the cholera in St. Louis may be referred to. In 1849 and 1850, in that city, as in most of Southern and South-western cities at that date, Sunday was usually devoted to pleasure and recreation. The laborer, the mechanic, the clerk, the tradesman, in fact large numbers from all classes of society appeared to look to that day, not only as a weekly rest from toil, but as a sort of holiday. As a matter of course intemperance and other vices were in the ascendant, and when the epidemic appeared, as advised by the Sultan of Turkey, many of the people gave unwonted looseness to their appetites, evidently under the impression that in this way they would free themselves from fear and danger of an attack; that a jolly life, and a merry one, would keep the evil from their doors.

The result was that the greatest mortality of the week almost invariably occurred on Monday, with a gradual decrease from that day until the return of Sunday.

RULES FOR INDIVIDUALS.

Give immediate attention to any disturbance of the bowels. It is the first indication of the coming malady. Check it while you can.

Keep out of the night air, and avoid the dews of the morning.

Keep the body clean. Wash the entire body every week; two or three times will do no harm. A dirty skin will invite the attack. Change your under-clothing frequently.

Wear flannel next the skin. It will protect against sudden changes of temperature.

Do not sleep on the lower floor, or in a small room with several persons. Cold water should be drank cautiously in warm weather. Ice-cream I have known to produce sudden and fatal attacks. Avoid as much as possible over-exertion and fatigue.

Do not give way to alarm. Fear and all the depressing passions are great provocatives to the disease.

Therefore, endeavor to keep a cheerful mind, and if attacked, never think for a moment but what you will recover. There is wonderful tonic power in faith.

Do not fear danger from contact with the sick. The cholera is not contagious.

Indulge in rational amusement. Do not sit too long, however, in a crowded room.

"Fear to our coffin adds a nail, no doubt,
And every grin, so merry, draws one out."

There is no question but that, as a general rule, persons of cheerful dispositions, regular, temperate, and cleanly in their habits, are much less liable to an attack of cholera than those who are negligent and careless in these respects.

"Our remedies oft in ourselves do lie,
Which we ascribe to heaven."

Those persons and those communities who pay

most attention to the observance of the plain laws of hygiene—the laws of God and nature—are passed by, while those who trust to bravado and a total neglect of the common rules of living are the first victims.

Be temperate in eating and drinking. Eat your meals at stated hours.

Abstain from stimulating drinks—ale and lager beer, as well as alcoholic liquors and wines.

Fish of all kinds are dangerous.

Avoid fruit. Even when ripe, it is liable to produce fermentation in the stomach. Unripe fruit is death.

Garden vegetables should be partaken of sparingly, if at all.

Cabbage, sauer-kraut, cucumbers, water-melons, etc., should be banished from the table.

During the prevalence of cholera it may be considered a sure thing that whatever tends to disturb the equilibrium of the system may lead to an attack.

The diet should be nourishing, warming, dry, and easily digested.

All excesses should be avoided.

Lean fresh meat, good potatoes, cold bread, rice, eggs, milk, butter, tea, and coffee, will afford a meal unattended with danger. The closer you confine yourself to these articles of food the better.

Pastry, puddings, cheese, pickles, and such like et ceteras, should be scrupulously avoided.

Eat moderately. Do not indulge in varieties of meats at the same meal, and swallow no more than the stomach can easily digest.

"If thou wilt observe
The rule of 'not too much,' by temperance taught,
In what thou eat'st and drink'st, seeking from thence
Due nourishment, not gluttonous delight,
Then many years may o'er thy head return.
So may'st thou live till, like ripe fruit, thou drop
Into the lap of mother earth; with ease be
Gathered, not harshly pluck'd, in death mature."

IN AND ABOUT YOUR HOUSES,

"Cleanliness is next to godliness."

Take up your carpets and have them well cleaned; let no dirt accumulate beneath them.

See to it that your mattresses, bedding, and hangings are thoroughly aired and cleansed.

Have every room in your house regularly and thoroughly ventilated.

Sleep in a chamber, or upper room, if possible.

Whitewash your walls, cellars, out-houses, fences. Lime is a purifier.

Keep the sewers, drains, and sinks free from accumulations of filth and refuse matter of every description.

The garbage and offal should be promptly removed.

Allow no decomposing vegetable or animal matter to remain on your premises.

Take one pound of chloride of lime, put it into a bucket of water, and after stirring it, every day, sprinkle a small quantity wherever foul air can possibly exist. Cellars, kitchen drains, back yards, and privy vaults should receive a portion.

Half a pound of sulphate of iron (copperas), and half a pound of sulphate of copper (blue stone),

dissolved in a bucket of water, is the best deodorizing and purifying agent that can be used for privies. Throw a portion into the vault, and allow the vessel to remain in the privy, stirring it occasionally. Both this mixture and chloride of lime will injure the clothing if it comes in contact with it.

Do not drink river water, or use it for cooking purposes, unless previously filtered or otherwise purified. Hydrant-water holds in suspension a large amount of animal and vegetable matter. This restriction I know to be of the utmost importance, in large cities, during the prevalence of cholera.

The purest water that can be obtained is from condensed steam, and in manufactories run by steam and on board of steamboats this is easily obtained. A barrel in a convenient position will hold the water as it is condensed from a steam-pipe arranged for this purpose. This water, for cooking purposes on board of steamboats, and, when properly cooled, for drinking, is the healthiest that can be used.

Cleanliness in the sick room is of the most vital importance, not only to the patient, but to the attendants and friends who assist him.

The evacuations from the stomach and bowels should be immediately removed to the privy vault. A vessel containing a solution of the chloride of lime, chloride of soda, or sulphate of iron, should be kept constantly in the room.

Be extremely careful that no portion of the matter evacuated from the system remains on the bedclothing, carpet, floor, or furniture. Throw a little

of the disinfecting solution into the vessel used by the sick person. In short be scrupulously clean.

Strict attention to the rules laid down will afford great protection, and materially lessen the chances of an attack of cholera.

Whenever the epidemic makes its appearance, every individual should give special attention to the state of his health.

Attend to the condition of the stomach and bowels. Eat and drink in moderation. Be careful not only in regard to what kind of food you eat, but also as to how much you eat—quantity as well as quality.

Keep the mind as free as possible from all undue apprehension of danger, and cholera will be disarmed of much of its power for evil.

FOOD FOR THE SICK AND CONVALESCENT.

The diet of the convalescent is of the most vital importance. The few preparations given herewith will be found excellent and quite sufficient for the first few days.

ISINGLASS JELLY.

Take two ounces of isinglass, two pints of water; boil to one; strain, add a little milk, and sweeten with white sugar.

THIN RICE.

Rice, three spoonsful; boil in two pints of water to one; strain; flavor with cinnamon, and sweeten with white sugar. Drink it warm.

BREAD JELLY.

Boil a quart of water and allow it to cool. Take about one-third of a baker's five-cent loaf, slice it, take off the crust, and toast to a light brown; then put it into the water, cover tight, place it on the coals or a stove, and boil gently. Try it occasionally by cooling a portion in a spoon; when it becomes a jelly, remove it. Strain; warm a little when it is to be used; sweeten with white sugar, flavor with lemon-peel.

TAPIOCA JELLY.

Take of tapioca two spoonsful; water, one pint; boil gently for an hour, or till it assumes a jelly-like appearance; add sugar and nutmeg to suit the taste.

SAGO.

Wash the sago well, and let it soak for two or three hours. To a tea-cupful of sago add a quart of water and a small piece of lemon-peel; boil gently, till it becomes a transparent mass. When nearly done, add a little sugar, and boil for a few minutes.

CHICKEN-WATER.

Take half a tender chicken, strip off all the fat, break the bones; add two quarts of water, boil half an hour, and season with salt. The liquor only to be used.

BEEF TEA.

Cut one pound of lean beef into small pieces, and boil it for twenty minutes in one quart of water, taking off all the scum that rises. Cool, skim, and

boil twenty minutes longer; strain, and season with a little salt. Very nourishing.

MUTTON BROTH.

Take three chops; cut off the fat; beat with a hammer or rolling-pin; cut into small pieces; put into a sauce-pan with a pint of water, a little salt, and some crusts of bread; cover the sauce-pan; boil fast; skim for half an hour.

TOAST WATER.

Toast slices of bread (do not burn); put them into a pitcher while hot, and add boiling water. When cool, strain and bottle. May be warmed and sweetened for use.

The above will afford ample nourishment for the sick and convalescent. During the first two or three days the patient should be restricted to the farinaceous preparations. After that, chicken, mutton, and other animal nourishment may be used. Several days should elapse before solid food should be resorted to, and then sparingly at first.

PUBLIC MEANS OF PREVENTION.

"The conditions of health and exemption, are
To be cleanly in all things, and breathe pure air."

In reference to this subject, the first thing to be considered is the fact that cholera is dependent primarily on atmospheric conditions, and proximately on local conditions; filth, and impure air engendered thereby, being the most conspicuous.

The deleterious principle, whatever it may be, mysteriously generated in the great crucible of nature —whether coming from the jungles of India, the simoons of Arabia, or the craters of Vesuvius— may be carried on the wings of the wind over the surface of the earth, without producing more than a slight disturbance of the functions of animal life, manifested in an unusual tendency to diseases of the bowels and general depression of the vital powers. We feel the influence of this slight poison, but, with a little extra care in our habits of living, are enabled to throw it off. It amounts only to a slight "predisposition." Another poisonous principle is generated in the laboratory of terrestrial filth. Every city and town sends up its deleterious gases, its disease-ladened malaria. It combines with the poisonous principle with which the atmosphere is already impregnated, a chemical combination takes place between them, and a new compound is instantly generated. This is the fatal cholera poison. "Predisposition" and "susceptibility" now become the positive malignant disease, spreading terror and death in every direction.

The cholera can not prevail without the combined action of these two agents. The first is beyond human control. It advances and recedes in obedience to laws of which we have no knowledge. It crosses oceans and continents as freely as the winds of heaven, and it would be as reasonable to attempt to control the storm and whirlwind as to attempt to control this cause of cholera. Its chemical affinity, however—the poisonous vapors continually arising

from the cauldrons of decomposing animal and vegetable matter which abound in and about the habitations of men, and without which either agent would be comparatively powerless for harm—is, to a very great extent, within our control.

All sanitary measures should be directed to the thorough purification of these choleraic gas-generating receptacles (retorts). All around us these manufactories of pestilential vapors are in full blast. From the stacks of offal in vacant lots; from the alleys reeking with pollution; from the gutters and back-yards, the tenement-houses of the poor—even where the proud mansions of the rich rise in costly grandeur—the polluting odors arise. Few persons realize the fact that in any great city, almost side by side with the lofty palaces of the rich, are to be found wretched hovels, squalid poverty, pregnant with the germs of pestilence; and yet such is the case. A careful inspection would reveal the materials of death-dealing malaria where least expected. This is where sanitary labor should begin. Competent authorities in every community, great or small, should be authorized to do this work.

As an evidence of the advantages to be derived, one or two facts may be stated. During the visitation of the cholera in 1850, the authorities of the city of Boston appropriated a sum of money sufficient to cleanse and purify the streets, alleys, yards—every place where there was a possibility of foul air existing. The work was done thoroughly and effectively. In St. Louis no attempt was made to remove the filth, or in any manner to improve the

sanitary condition of the city, except what may have been done by a few individuals on their own premises. Now compare the results. Boston, out of a population of 140,000, lost but 327 by cholera—from all causes, about 5,000; while in St. Louis, with less than 65,000 inhabitants, over 6,000 persons died of cholera alone.

In 1832, the City Council of Baltimore, with commendable forethought and liberality, appropriated forty thousand dollars for the work of purification, in anticipation of the coming scourge. The result was, that out of a population of 160,000 but 853 died of cholera.

It would be useless, in a work like this, to instruct or lay down any rules for the government of "Health Committees" or "Commissioners." These bodies are generally presided over by medical gentlemen in every way qualified to suggest such measures as circumstances may call for. Every citizen, however, should cheerfully lend his aid in the work of cleanliness. Persons having in charge that duty should visit regularly, and at short intervals, every street, lane, alley, and passage-way, public or private, and see that no dirt or waste matter accumulates. Filth, of whatever description, should be immediately removed. Damp, dark rooms, cellars, and other places, should be whitewashed. All vacant lots, back-yards, and manufactories in the neighborhood should be visited and cleansed. Gutters and drains should be kept clear and in order. No water should be allowed to stand, to become stagnant. Every privy and vault in the city should

be examined, emptied, if necessary, and disinfecting agents freely used; and in all cases where putrid or decaying matter has been removed, the spot should be covered with lime or other disinfectants.

Whatever filth is removed should in no case be deposited on the surface of the ground, even though at considerable distance from the city.

The over crowding of tenement-houses should be prohibited. Landlords should be made answerable for this evil.

One of the most important duties devolving upon a "Board of Health" I believe to be attention to the state of privy vaults, the removal and disposition of their contents, as also the closest scrutiny in regard to any human excretions that may be deposited in yards, alleys, and out-of-the-way places.

Circumstances led me, early in my experience, to give this subject especial attention. Localities where the disease appeared with peculiar malignance, I found were contaminated with the foul effluvia arising from filthy habits. The excrement of the sick, if not immediately removed, I am convinced, is a greatly aggravating cause of fatality.

In confirmation of this opinion, Dr. Jameson mentions several facts. He says: "We were once cognizant of dysentery being occasioned by exposure to human filth. A privy, which had served the purpose of a pretty extensive hotel, in an inland town, without being cleaned out for several years, was emptied in the summer season. A most terrible stench was produced in one of the streets, by scattering a good deal of the contents of the privy; in a

few days several families were affected with severe dysentery, while no cases occurred in any of the other streets. During the American war, an American regiment, consisting of six hundred men were affected with dysentery, from being encamped near a large mass of human feces, and the disease soon was checked by removing their camp at a distance from it."

It is not necessary to speculate or discuss the probabilities of the truth or falsity of the opinion I have advanced. The facts are certainly sufficient to attract our attention when the great danger is nigh. In ordinary epidemics, cleanliness in all things is requisite to exemption; but in cholera the necessity for strict sanitary precaution is tenfold greater, since it is easier to prevent than it is to cure the disease.

PART IX.

THE BROAD STREET PUMP.

AN EPISODE IN THE CHOLERA EPIDEMIC IN LONDON.

BY THE REV. H. WHITEHEAD.

Early on the morning of September 1, 1854, in the Berwick Street district of St. James's, Westminster, where I had spent some hours of the preceding day without hearing any mention of cholera, and where, in former epidemics, the mortality from that disease had been inconsiderable, I was asked to visit a house in which lay already collapsed four persons who had been seized with cholera during the night; and, on leaving this house, whichever way I turned, I came upon similar scenes. At noon, when I met my brother curate and the Scripture reader, for a short time, in the vestry of St. Luke's, Berwick Street, I learned that they had each been occupied all the morning in the same way as myself. The rest of the day was spent in the same manner; and, as an indication of the severity of the outbreak, I record that of all the cholera patients visited by me on that day only one recovered.

This state of things apparently continued for four

days, during which time the medical men of the neighborhood, whose labors, day and night, in behalf of the sufferers were beyond all praise, declared, with one consent, that specific remedies were unavailing; and as for "premonitory symptoms," there were, they said, few, or even in some cases none at all.

On the fifth day we were all agreed that a change for the better had taken place, as we perceived that fewer persons were attacked than at first, and that the attacks were less severe. This change, however, was subsequently seen, when the statistics of the outbreak were collected and examined, to have been more gradual, and to have begun at an earlier period, than we had supposed; for, though the deaths were as numerous on the 3d and 4th of September as on the 1st, yet the greatest number of fatal ATTACKS occurred on the 1st, after which there were fewer fatal attacks on each succeeding day, the number positively decreasing 50 per cent. on the 3d as compared with the 2d, and 10 per cent. on the 2d as compared with the 1st. Perhaps the most fatal period of attack was the hour or two before midnight on August 31. The deaths were the most numerous on September 2, the excess of mortality on that day being due to attacks on the previous day. By the 10th, the number of fatal attacks throughout the whole parish of St. James had declined the low average of the preceding month.

But during those ten days the ravages of the disease, in a small and remarkably well-defined part of the parish, were very severe, nearly seven hundred persons having been fatally seized, in that short

time, within a circuit of two hundred and fifty yards radius from the point of junction between Broad Street and Cambridge Street. Such was the intensity of the outbreak that of forty-five contiguous houses, extending in different directions from that point, only four escaped without a death; and at an average distance of fifteen yards from St. Luke's church, situated within the compass of said radius, were four houses which collectively lost thirty-three inhabitants. Of the streets thus devastated, Broad Street itself suffered the most severely, its population having been just decimated, ninety of its eight hundred and ninety-six inhabitants having died, beside twenty-eight non-resident work-people. Other streets, however, had nearly as high a rate of mortality.

Thus limited in its extent, brief in its duration, and continually on the wane from the very first moment of its appearance was this great outbreak, the like of which had, perhaps, never before been seen in this country.

Of course, as soon as it began to subside, leaving us time for reflection and discussion, we indulged in speculation respecting its origin; but none of us could advance a satisfactory hypothesis, for the simple reason that its facts seemed to contradict all the then prevalent theories concerning the spread of cholera.

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The district itself resembles surrounding districts which escaped, while it might be favorably contrasted in sanitary matters with other parts of London which were lightly visited. Its level, too, is com-

paratively high, in which respect it presents an exception to a supposed law which had previously seemed to operate in connecting cholera more especially with the lower levels of London.

All this may, at first sight, appear very unsatisfactory, and so it appeared at the time to such of us as cared to speculate as to the origin of the outbreak. Nevertheless we were not without hope that its remarkable character would render its determining cause somewhat easy of detection. We had observed that its limits in every direction were most sharply defined, that those limits lay within a narrow compass, and that the beginning of the outbreak was very clearly marked in point of time. There had been scattered cases of cholera throughout the parish before September; but it was evident that something new and distinct suddenly came into operation on the last night in August. What that was we trusted might eventually be ascertained.

It was, therefore, with great satisfaction that we heard that, on the motion of Dr. Lankester, a committee had been appointed by the Vestry of St. James to inquire into all the circumstances of the case.

The Cholera Inquiry Committee was composed of eight vestrymen, six medical men, and one other clergyman beside myself; and, after long and laborious examination of every circumstance which could possibly throw light on the subject of our inquiry, a report, drawn up by Mr. J. Marshall, then assistant surgeon and now surgeon of University Hospital, was presented to the vestry, which report, if it could

have been widely circulated, would have rendered it wholly unnecessary for me to write another line upon the matter to which it relates.

In this investigation, while we did not overlook such general conditions as might have operated in producing a widely-spread epidemic, we yet felt that they must have required some special or local conditions to intensify its influence within the small compass which demanded our more immediate attention. Every local condition, therefore, of the infected district, such as elevation of site, nature of soil and subsoil, surface and ground plan, streets and courts, density and character of population, internal economy of houses, cess-pools, house-drains, and sewerage, was minutely investigated. But, though we found much to lament or condemn in most of these particulars, we could not find in them any satisfactory explanation of the sharp line of demarkation which on every side surrounded what we termed the "cholera area" in the midst of a densely-peopled neighborhood; nor could we derive from them any theory which accounted for the apparent anomalies within the area itself.

It was, however, in these very anomalies that we found the clue which ultimately led us to a unanimous conclusion "that the sudden, severe, and concentrated outbreak, beginning on August 31 and lasting for the few first days of September, was in some manner attributable to the use of the impure water of the well in Broad Street."

One member of the committee, the late Dr. Snow, even before the committee was formed, had pro-

pounded this opinion, and, indeed, had prevailed upon the parish authorities to remove the handle of the pump on the 8th of September. But scarcely any one seriously believed in his theory. For my own part, when I first heard of it, I stated to a medical friend my belief that a careful investigation would refute it, alleging as one proof of its inaccuracy the fact of several recoveries from collapse having taken place, at least in spite of, if not actually by reason of, the constant use of the Broad Street water.

I added that I knew the inhabitants of Broad Street so well, and had occasion almost daily to spend so much time among them, that I should have no great difficulty in making the necessary inquiries. Accordingly I began an inquiry which ultimately became very elaborate, at an early stage of which, however, one day meeting the same friend, and being asked by him what way I had made toward clearing the character of the pump, I was obliged to confess that my opinion on that matter was less confident than when we had last talked about it. Soon after making this confession, I received from Dr. Snow a copy of the second edition of his work on "The Mode of Communication of Cholera," in which I found an account of his researches into the supposed influence of the Broad Street well in producing the St. James' outbreak. I found, moreover, that he attributed this influence not to general impurity in the water, but to special contamination of it from the evacuations of cholera patients, which he conjectured must have reached the well from the

sewer or cess-pool. In thanking him for the book, while I could not help admitting the weight of many of his recorded facts, I still clung, as a last resource, to an *a priori* objection to his theory, urging that if special contamination of the water in the way suggested had begun the mischief, the outbreak ought not so soon to have subsided, when much larger quantities of cholera excretions must have been continually pouring into the well through the same channel, whatever it might have been, of communication with the sewers. As for cess-pools, I at that time supposed they had mostly been abolished.

In the face, however, of these objections, the evidence implicating the pump kept on accumulating, not only in my hands, but also in those of other members of the committee who were engaged in a similar inquiry, until, at length, sufficient evidence was collected to bring the whole committee to the unanimous verdict which they finally recorded.

I can not, in the space now at my disposal, set forth this evidence in detail; but I will touch on its most salient points.

It appeared, then, according to a carefully executed plan of the district, in which every house and every death was indicated, that the Broad Street public pump occupied a strikingly central position in the "cholera area;" that there was no other public pump within the area; and that, except in one direction, the mortality diminished almost to total disappearance on approaching decidedly nearer to any other pump. The exception was the neighborhood

of the pump in Little Marlborough Street, in which neighborhood several deaths took place in Cross Street and Carnaby Street. But, as a matter of fact, the inhabitants of those streets did resort to the Broad Street pump, having, whether with or without reason, conceived a dislike to their own pump. A friend of mine, having more than once urged Cross Street as an obvious objection to the water hypothesis, went and made some inquiries in that street. When I next saw him he begged to withdraw his objection. Dr. Snow examined the cases of forty-eight persons who had died in houses nearer to other pumps than to that in Broad Street, and discovered that twenty-eight had actually from preference drank the Broad Street water shortly before being attacked, while there was a probability that ten of the others also drank it. The details of this examination are given in the report.

Broad Street itself, as I have already said, suffered the most severely of all the streets. Ninety of its eight hundred and ninety-six inhabitants died, beside twenty-eight non-resident work-people. Of those twenty-eight work-people, seven belonged to a factory where the pump water was habitually used, while an adjoining factory, employing the same number of persons, where this water was never used, lost not a single "hand;" eighteen others of the twenty-eight worked at a factory situated close to the pump, from which water was daily fetched for the use of the workers; and these eighteen were all fatally seized during the first two days of the outbreak, after which the factory was temporarily closed.

On the other hand, not a single death occurred among the seventy men employed at a brewery on the same side of the street, of whom it was affirmed to be certain that none ever used the pump water, there being a deep well on the premises. With one exception, and that a house with only three inmates, the brewery (with its seventy men) was the only house free from death among the twenty-two houses (with their sixty-seven deaths) on the south-side of the street. An additional contrast to this remarkable exception was presented by the mortality among the laborers at work on an unfinished model lodging-house at the rear of the brewery, and separated from it only by a narrow court, seven out of thirty-five men so employed having been fatally seized with cholera. The works were stopped on the third day of the outbreak, and it was ascertained that the Broad Street water had been in use among these men.

One-half of Golden Square is within the limits of the cholera area, and yet entirely escaped. It is considerably nearer to two other pumps. On the other hand, St. Anne's Court, which lies just beyond the radius, and was heavily visited, is almost, throughout its whole length, nearer to the Broad Street pump than to any other.

St. James's Work-house, not 150 yards from the center of the area, surrounded on all sides by houses in which the deaths were numerous, and subject to the continual importation of the dying and the dead, lost only 5 of its 500 regular inmates; exactly the

same number as in former visitations. The pump water was never used there.

Peter Street afforded, perhaps, as singular an instance as could be found of what is often termed the capriciousness or eccentricity of the cholera; for, whereas there were 19 deaths in its smaller (western) portion, there was only 1 death in its much larger (eastern) portion. Now, the halting-place of the pestilence—a house which lost 12 of its inhabitants—is only a few yards beyond the line of equidistance between the Broad Street and Rupert Street pumps, and the use of the Broad Street water in that house was ascertained to a certainty. The further one goes eastward from this house, of course, the uncertainty as to the relative distances from the two pumps becomes less. But the one victim further east "fetched in a large can of water from Broad Street, on the 2d of September, and began drinking it freely."

One fact is remarkable. A lady, residing at Hampstead (West End), being very partial to the Broad Street water, was in the habit of drinking it daily, having it fetched in a bottle by a cart that went every day from Broad Street to Hampstead. She was seized with cholera on September 1, and died the next day. A lady staying with her at the time also drank of it and died. A servant drank the water, and had a slight attack of diarrhea. No other case of cholera occurred at West End.

Dr. Snow ascertained that 61 out of 73 persons, registered as having died in the immediate neighborhood of the Broad Street pump on the first two

days of September, had been accustomed to drink the pump water either constantly or occasionally; while in 6 cases only was he informed that the deceased used not to drink this water, and concerning the remaining 6 he could learn nothing. The keeper of a coffee-shop frequented by mechanics, where this water was supplied at dinner-time, told him, on the 6th of September, that she was already aware of nine of her customers who were dead. He also recorded the case of a gentleman who came from Brighton, on the 1st of September, to see his brother, who had been seized with cholera. He found his brother dead, did not see the body, and, having taken some luncheon, with a small tumbler of brandy and water—the water being from Broad Street—left the house in twenty minutes. He died of cholera next day at Pentonville. In one street, assigned to Dr. Snow by the committee for special investigation, he found that, of its fourteen houses, the only four which escaped without a death were those in which the Broad Street water was never used, whereas it had been more or less used in the other ten.

What, after all, was the matter with the well?

One of the strangest facts in connection with this inquiry is, that the impurity of the well-water was, in point of time, the very last discovery made by the investigators. We collected the evidence already described, not only in ignorance of the fact of the well having been contaminated, but in the face of positive and seemingly reliable evidence to the contrary. The sides of the well had been examined,

and declared—in a report made, by order of the Paving Board, on November 27, 1854—"free from fissures or other communications with drains or sewers, by which such matters could possibly be conveyed into the waters." Both chemical and microscopical analysis had "failed to detect any thing which could be pronounced peculiar to a cholera period, or capable of acting as a predisposing, co-operating, or specific agent in the production of that disease."

We stand exonerated, therefore, from the imputation of seeking to impugn the well-water as accountable for the outbreak on the ground of any previous knowledge of its impurity. Indeed, for my part, as I have sufficiently shown, I had a leaning the other way. And well I might have such a leaning, having myself drank a little of the water, cold, with brandy, on the evening of September 3. On that day, we now see, it was less injurious than it had been; otherwise, as I found from other cases, brandy would not have neutralized the effects of the water when taken cold, though, of course, it diminished the quantity. In spite of my original bias, however, I went on collecting the evidence, until, at the very close of my inquiries, I accidentally lighted on a fact which led to further examination of the well, and to the excavation of the soil between the well and the nearest house.

From this examination there resulted the following disclosure. Old-fashioned, flat-bottomed, its mortar-joints perishing, its brick-work decayed, the main drain from the house entered the sewer at the

top instead of at the bottom, thereby dispensing with the usual fall, and facilitating the premature exit of fluid through its sieve-like sides. Congenial appendage to such a drain, a cess-pool intended for a trap, but misconducted, was discovered in the front area, with other abominations, unmolested by water, which I forbear to recite. The cess-pool, of course, rivaled the drain in the disreputable state of its brick-work, the bricks admitting of being lifted from their beds without using the least force. The continuous passage of the fluid through the sides of the cess-pool being thus provided for, similar arrangements for its overflow presented themselves to the notice of the investigators, in the shape of a covering of saturated rotten boards. In close proximity both to drain and cess-pool—its water line but eight feet of vertical depth below the bottom level of the cess-pool—two feet eight inches the horizontal distance between the outer brick-work and the drain—stood the Broad Street well. I need scarcely dilate upon the "washed appearance of ground and gravel—channeled furrows observable from the inside the well; black, saturated, swampy soil"—in order to prove that the same policy which had long used the Thames for a sewer, had, at least in one case, made a cess-pool of a well.

If I have said any thing in this paper which appears to militate against the views of those who connect filth with cholera, I trust that I have now made amends, having furnished them with an additional argument for urging the disuse of the London surface wells, which, from their very nature, are,

as our report alleged, "not only liable to special contamination, but subject to constant, unavoidable, and habitual impurity." And yet, strange to say, they are held in great repute. It is a fact that the Broad Street pump could boast a metropolitan reputation. It has been said, I know not with what truth, that its water was selected to sparkle in a once celebrated "nectar." Its reputation is explained by Mr. Marshall as having been "partly due to its low temperature, to the quantity of carbonic acid contained in it, and to the saline matter preventing its decomposition until after it had free access to the air."

It only remains that I should relate the circumstance which led to further examination of the well, and the excavation of the surrounding soil.

There were, as I have stated, three cases of cholera in Broad Street before the 31st of August, on the evening of which day the great outbreak began. In consequence of Dr. Snow's suggestions, I made particular inquiries respecting the two persons seized on August 12 and 30. But both these cases had been in houses too far removed from the well to affect it otherwise than through the sewer, which, being a new sewer, seemed very unlikely to leak. As to the first cases, on August 31, they were so nearly simultaneous as to preclude the notion of their having been otherwise connected with each other than as having a common origin. But, singularly enough, I at first overlooked the case of August 28, or, rather, I had recorded only the date of death, September 2. I can only account for my

not having inquired particularly into this case by the fact of its having been that of an infant, and I had not supposed that any one who died in Broad Street on the 2d of September had been ill for several days. One day, however, while searching a file of the Registrar's returns for another purpose, I came on the following entry:

"At 40 Broad Street, 2d September, a daughter, aged five months; exhaustion, after an attack of diarrhea, *four days previous to death.*"

From my familiarity with the street, I knew that this was the house immediately facing the pump; so I hastened off at once to the house, and ascertained from the mother, who occupied the back parlor, that the child was attacked on August 28, and that the dejections at first were abundant, but ceased on the 30th. In answer to further questions, she told me that the dejections were collected in napkins, which, on being removed, were immediately steeped in pails, the water from which was poured partly into a sink in the back yard and partly into a *cess-pool in the front area.*

Being struck with the dangerous proximity of this cess-pool to the pump-well, I communicated the facts to the committee, who forthwith ordered an investigation to be made, with what result has already been described.

Now, if this child's dejections did the mischief, it is easy to see, as they ceased on August 30, how so shallow a well may have purified itself in a few days, especially as the cholera patients drank its

water copiously, some of them at the rate of four gallons a day.

But it is not easy to see why the mischief was not prolonged by further contamination of this water from subsequent cases in the same house. Certainly it may be suggested that the well may have killed off most of its habitual drinkers in the first few days of the outbreak, leaving only non-drinkers and those who were proof against its influence. But that is not a satisfactory hypothesis. A better explanation, perhaps, may be found in the act of three of the subsequent cases having occurred in the upper back rooms, where there was a great temptation, in the confusion of the moment, to throw the evacuations out of the windows into the yard, which I ascertained was in one case actually done. And the fifth and last case in this house, which was that of the father of the infant, occurred on September 8, the very day on which the handle of the pump was removed.

Of course there arose considerable discussion among the doctors as to the precise nature of the child's illness, some contending that its diarrhea was not choleraic—an opinion which is entitled to the more respect from its having been that of the doctor who attended the child. The committee, therefore, did not pledge themselves to the conclusion that the outbreak was due to this case.

But this much, at any rate, may be affirmed, that, whatever uncertainty there may be about the nature of the infantine diarrhea, the plain fact of the child's dejections having been poured into a cess-pool (the

connection between which and the pump-well is clearly established) for the period of three days immediately preceding a great outbreak, the phenomena of which point decidedly to the pump as its origin, is indeed a very remarkable coincidence.

PART X.

CONCLUDING REMARKS.

In a preceding chapter, the imperative necessity for cleanliness and care in regard to the removal and disposition of fecal matter—especially the excrements of cholera patients—was alluded to. The history of the "Broad Street Pump" affords an illustration of the importance of this subject. The recent outbreak of cholera at Epping, near Southampton, England, gives additional confirmation to the urgency of the suggestions made. The disease suddenly invaded Epping during the latter part of January of the present year. A knowledge of the presence of the epidemic at Southampton had cut off communication between the two places. The choleraic atmosphere, however, existing at the latter place, no doubt was carried by the winds over the suburban town, subjecting the inhabitants to its influence, as was evidenced by an unusual number of cases of diarrhea, and the general prevalence of bowel complaints. The irruption of cholera, though circumscribed in its limits, as in the case of the "Broad Street" outbreak, was most fatal in its results.

The authorities directed an inquiry to be made into the origin of the disease in that locality, and it was ascertained that a house-well, the water of which was used by the family in which the disease made its first appearance was polluted by the drain from a privy and sink. It is not necessary that the water so contaminated should be taken into the stomach to produce disease. The subtle poison, more extensively diffused by admixture with the fluid, is thrown off with its moisture and vapors, which, being inhaled, produces its baleful effects. This result is more particularly observable in cases where women have washed the soiled clothing of those who were or had been sick of the cholera. In consequence of the steam coming in contact with the lungs they have been taken down with the disease.

All vessels used by cholera patients should be thoroughly and repeatedly cleansed, using for this purpose a small quantity of the solution of chloride of lime The apartment should be well disinfected, by the means heretofore suggested, and the vault or receptacle for the excrements should be most carefully attended to, and free use made of disinfecting agents.

A table-spoonful of the solution of chloride of lime, or soda, added to a gallon of water in which soiled linen or cotton garments are to be washed, will counteract the poison. This solution, however, destroys the fabric of woolen goods, and to cleanse these a small quantity of benzine or coal-oil may first be used, and afterward soap and water.

In concluding this treatise, I would take occasion,

once again, to urge the necessity for the adoption of strict sanitary measures during the expected approach and continuance of the cholera, as also the importance of unremitting watchfulness and promptitude in the treatment of the "premonitory symptoms."

Recovery, or death, in the "collapsed" disease, depends upon the vital energies of the patient, and the strength of the poisonous influence. Medical treatment is only valuable when life is struggling, hand in hand with strong vital powers, against the encroachments of death. The functions may be assisted in turning the scale in favor of recovery; but, more frequently, the failing powers are too much prostrated to rally, and all remedies will prove unavailing in arresting the fatal progress of the disease.

THE CHOLERA MEDICINE CASE.

Every individual and every family should have the necessary medicines within reach during the prevalence of cholera. In the mode of treatment I have suggested, the remedies designated are the most reliable and available that can be recommended for general and indiscriminate use. Under the immediate care of an experienced physician, many modifications of the treatment, suggested by the attendant circumstances, might be made with advantage.

For the accommodation of individuals, families, etc., I am prepared to furnish packages containing all the articles required for the successful treatment of cholera. The medicines will be of the best quality, carefully compounded, divided into appropriate doses, where practicable, and neatly, conveniently, and substantially put up.

The package will contain several very important remedies not alluded to in the treatment I have laid down for general use, for the reason that they can seldom be obtained, and any directions for preparing them would only tend to confuse and complicate the treatment.

Aside from the incalculable value of these medicines during the prevalence of cholera, the case contains the best remedies known for diarrhea, dysentery, flux, cholera-morbus, hemorrhage of the bowels, and summer complaints generally.

Plain and full directions for the use of the medicines will be sent.

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